The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 663.—Vol. XVIII. LONDON, SATURDAY, MAY 6, 1848. [Price 6d.

WHEAL MARTHA MINE.—IMPORTANT SALE OF MINE MATERIALS, POWERFUL STEAM-ENGINE, FOUR WATER-WHEELS, &c.—TO BE SOLD, AT AUCTION, by F. A. DAVIS, on Tuesday and Wednesday, the 23d and 24th of May, 1848, each day at Eleven o'clock in the forenoon, at WHEAL MARTHA MINE, at LUCCOTT, in STOKECLIMSLAND, about five miles from Tavistock, and six miles from Calstock and Cotehill Quays, on the Tamar, the whole of the

VALUABLE MATERIALS OF THE SAID MINE:

COMPRISING

1 WATER-WHEEL, 40-feet diameter, 4-feet in breast, with cast-iron ring sockets and cylinder ends.
1 Ditto MACHINE WHEEL, 30-feet in diameter, 2-feet breast, with wood ring iron socket and cylinder ends, with a crusher and whim attached.
1 Ditto, 30-feet diameter, 3-feet breast, with cast-iron ring sockets and cylinder ends.
1 STAMPS WHEEL, 12-feet diameter, 4-feet breast, calculated for 12-heads.
25 9-feet 15-inch pumps
27 9-feet 11-inch ditto
60 9-feet 9-inch ditto
15 9-feet 7-inch ditto
3 9-feet 10-inch working barrels
3 9-feet 8-inch ditto
1 11-feet 10-inch ditto
1 9-feet 6-inch ditto
6 6-feet 8-inch doorpieces
1 4-feet 10-inch doorpiece and door
2 6-feet 10-inch ditto
1 6-feet 15-inch ditto
1 4-feet 7-inch ditto
1 9-feet 10-inch plunger-pole, with 11-inch case, stuffing-box, and gland
2 9-feet 9-inch ditto, with 10-inch cases, stuffing-boxes and glands
1 11-feet 14-inch plunger-pole and case, stuffing-box & gland, lined with brass
1 11-feet 7 inch ditto ditto
3 6-feet 8-inch windbores
3 9-feet 8-inch ditto
2 9-feet 10-inch ditto
1 6-feet 10-inch ditto
1 4-feet 15-inch ditto (new)
1 3-feet 7-inch ditto
1 4-feet 10-inch H-piece
1 4-feet 9-inch ditto
1 4-feet 15-inch ditto
1 4-feet 7-inch ditto

A large quantity of capstan and whim-chain.
About 2½ tons strapping-plates; 5 loads new timber.
A large bob-gudgeon, with saddles and brasses to fit.
8 Main balance and other bobs, with saddles and brasses.
90 Fathoms 6-inch square main-rod.
57 Fathoms 11-inch main and balance ditto
80 Fathoms 3-inch iron flat-rods, pulleys, and stands.
40 Fathoms 2-inch ditto ditto.
A large quantity bucket-rods and buckets; a great many capstan & whim-sheaves.
3 Very superior capstans and shears, with pulleys, complete.
150 Fathoms 11-inch capstan-rope: about 25 fathoms of 5½-inch rope.
80 Fathoms whim-rope; 2 horse-whims, with poppet-heads and pulleys.
Pulleys, brasses, and stands; a powerful wrench and chain.
Bolts, burs, yokes, staples and glands, in variety.
220 Fathoms of ladders; engine counter, by Browne.

A quantity of tramroad iron, cisterns, dividings and casings, with the materials of several wood houses, dressing sheds, floors and launders, whim and machine kibbles, 1 40-inch smiths' bellows, 1 36-inch ditto, 2 anvils, vice, mandril, smiths' horse, crane, screw stock, plates and taps, large and small beams, scales and weights, tram waggons, a quantity of new and old brasses, bell and stand, several tons of new and old iron of various sizes, copper powder cans, water barrels, nails, shovels, hills, 2 sets blocks, shaft gig, wheelbarrows, smiths' and miners' tools in great variety, hand screws, 2 winches, carpenters' benches, saw-pit frame, planks, a miner's dial, theodolite, and set of mathematical instruments, &c.—Also, a very powerful STEAM-ENGINE (nearly new), on the combined principle of Messrs. Harvey and Co., from the drawings of Mr. William West, with 60 and 32-inch cylinder, equal to 141-horse power, in excellent condition, together with the boiler about 9 tons.

Catalogues will be ready, and may be obtained at the office of the auctioneer, in Tavistock, on and after the 16th May next, by personal application, or letter pre-paid, from which time the whole will be on view.

The above materials are exceedingly numerous, and of first-rate quality, having been selected at establishments of known celebrity, regardless of expense, and are therefore well worthy the notice of mine agents and dealers generally.

Refreshments will be provided.

County Fire and Provident Life Offices, Tavistock, April 18, 1848.

COMBMARTIN MINES.—IMPORTANT AND VALUABLE MINE MATERIALS, COUNTING-HOUSE FURNITURE, LAND, &c., near ILFRACOMBE, NORTH DEVON.—TO BE SOLD, BY AUCTION, by Mr. G. HEARSON, on Wednesday and Thursday, the 24th and 25th days of May next (if not previously disposed of by private contract, of which due notice will be given), all the

STEAM-ENGINES, MACHINERY, MINING MATERIALS, AND OTHER STORES,

TOGETHER WITH THE LANDED PROPERTY,

Belonging to the Combmartin Lead and Silver Mining Company—consisting of ONE excellent 50-inch cylinder PUMPING-ENGINE, 9-feet stroke in cylinder, and 8-feet stroke in shaft, with two boilers, together about 24 tons.
ONE excellent double-acting STEAM-WHIM, 14-inch cylinder and boiler, about 5 tons, with crushing apparatus, stamps, cast-iron axle, heads, and lifters, complete.
One-inch PRESSURE-ENGINE, complete.
ONE 26 and 50-inch Sims's combined cylinder PUMPING-ENGINE, with one boiler, about 10 tons, 9-feet stroke in cylinder, and 8-feet stroke in shaft.
Several hundred fathoms of 7, 8, 9, 10, 11, 12, and 14-inch PUMPS, flat-rods and capstan-ropes, of various sizes, steam-whim and horse-whim chains, and a general assortment of mining materials and machinery.

For particulars of which, see handbills, which may be had of the auctioneer, Barnstaple.
Dated April 25, 1848.

VALUABLE FREEHOLD ESTATE.—WAINGROVE'S HALL, DERBYSHIRE, will BE OFFERED FOR PUBLIC COMPETITION, by Mr. BREAREY, on Wednesday, the 31st day of May inst., at the ROYAL HOTEL, in DERBY, at Five o'clock in the afternoon (subject to such conditions as will be there exhibited), all that MODERN MANSION, known as WAINGROVE'S HALL, with requisite OFFICES, COACH-HOUSE, STABLING for 10 horses, BARN, and other BUILDINGS and CONVENIENCES, COTTAGES for labourers, GARDENS, ORCHARDS, PLEASURE GROUNDS, and FISH-PONDS—suitable for the residence of a gentleman's family; together with the under-mentioned PARCELS of excellent enclosed arable, meadow, and pasture LAND and PLANTATIONS, adjoining and contiguous to the said mansion-house, situated in the several parishes of PENTRICH and HEANOR, in the COUNTY OF DERBY—viz.:

No. on Plan.		Cultivation.	A.	R.	P.
1	Great Wood Close	Arable	7	1	33
2	Plantation	—	0	3	1
3	Little Wood Close	Arable	1	3	23
4	Plantation	—	0	1	11
5	Far Court Close	Arable	3	1	15
6	Plantation	—	3	0	12
7	The Pasture	Pasture	13	2	37
8	Limekiln Close	ditto	6	0	3
9	Round Meadow	Arable	11	0	34
10	Plantation	—	0	0	22
11	Ditto	—	0	2	37
12	Ditto	—	1	0	15
13	Over Willow Close	Arable	3	0	2
14	Plantation	—	0	0	22
15	Nether Willow Close	Arable	2	0	22
16	Joshua's Meadow	ditto	4	3	25
17	Bracken Close	Pasture	11	3	21
18	Barn Croft	ditto	3	0	17
19	The Hall, Outbuildings, Garden, Orchards, Pleasure Grounds, Lawn, and Entrance Road	—	23	2	34
20	The Wilderness	—	0	2	33
21	Broom Close	Arable	2	1	38
22	Common Piece	ditto	0	3	33
	Total		102	3	10

The house is situated on a gentle acclivity, nearly in the centre of the estate, in the immediate neighbourhood of the Donnington Hunt, within 9 miles of Derby, 12 from Nottingham, and 5 from Alfreton; Ambergate and South Wingfield Stations, on the Midland Railway, and Codner Park, on the Erewash Railway, are at easy distances.

The estate lies in a ring fence—is about equally in the parishes of Pentrich and Heanor—that in the latter parish being tithe free.

The land is of excellent quality, well timbered with oak, ash, larch, &c., of mature growth; and, together with the fish-ponds, pleasure grounds, and plantations, give a park-like appearance, and well-watered by never-failing springs.

The whole estate abounds with several beds of hard and soft coal, of the quality of the far-famed old Denby and Kilbourne fields, as also with superior ironstone, valuable stone for building purposes, and excellent brick-clay, the situation and qualities whereof will always command a market.

A bill is now before Parliament (read a second time) to obtain an Act for making a branch from the Midland Railway to Ripley, and provision is therein made to construct a branch on a self-acting plane, about 12 chains in length, purposely to connect the estate therewith.

*** A person resident at the house is appointed to show the estate; and further particulars and information may be obtained at the offices of Messrs. J. W. Bromley and Aldridge, solicitors, 1, South-square, Gray's Inn, London; of the auctioneer, in Derby; or of Messrs. Rickards and Son, solicitors, Alfreton, Derbyshire, where maps and surveys of the estate are deposited for inspection.—Alfreton, May 1, 1848.

VENTILATION OF COAL MINES—BIRAM'S PATENT ANEMOMETER.—This INSTRUMENT has now been SUCCESSFULLY EMPLOYED by many eminent engineers, to whom reference can be given.

For particulars, apply either to the inventor, B. Biram, Esq., Wentworth, near Rotherham; or to the maker, John Davis, Derby, manufacturer of miners' dials, chronometers, safety-lamps, and all kinds of instruments appertaining to the engineer, are made and kept in stock.—Repairs promptly attended to. J. DAVIS, Irongate, Derby.

EXTENSIVE IRON-WORKS FOR SALE.—TO BE SOLD, BY PUBLIC ROUP, within the Royal Exchange Sale Rooms, Glasgow, upon Wednesday, the 24th day of May next, at Two o'clock afternoon (if not previously disposed of by private bargain), the BLAIR IRON-WORKS, belonging to the Ayrshire Iron Company, situated in the parish of Dairy, and county of Ayr.

These works, which have been recently erected at an immense cost, consist of two blowing-engines, five blast-furnaces, workmen's houses, steam-engines for working the minerals, together with utensils at the pits, furnaces, &c., all in working order, and capable of producing upwards of 35,000 tons of pig-iron per annum.

One of the blowing engines, high-pressure, estimated at 90-horse power, was erected in 1841; the other, a condensing engine, was erected in 1847, and is estimated at 200-horse power, the latter being capable of blowing five furnaces, and both fitted up in the most substantial manner, and at present in the best working condition.

The furnaces have been erected with the greatest care, and are fitted with air-heating apparatus of the most approved construction. The make of each furnace has generally averaged upwards of 150 tons of iron per week, and some of them have produced 180.

There are, besides the manager's house and store buildings, 187 workmen's houses, in a habitable state, attached to the furnaces and pits, and there are 20 partly built, which could be finished at a small additional outlay. There are also a new foundry, wright shop, fire-brick work, smithy, &c.

The MINERAL FIELDS, consist of COAL, IRONSTONE, LIMESTONE, and FIRE-CLAY, held in lease, by the company, at moderate fixed rents and royalties, all situated within easy distances of the furnaces, and for the most part have the advantage of railway communication.

The COAL-FIELDS consist of several hundred acres, of which only a small portion has been wrought. Several pits, fitted with good engines and machinery, are sunk to the coal, and partly in operation.

The IRONSTONE consists of the well-known black-band, yielding about 3000 tons of calcined stone per acre; and it has been estimated that there are 300 acres or thereby still to work—besides which, there is a large extent of clay-band ironstone, hitherto little wrought, but capable of yielding a large output. There are 15 pits, with excellent steam-engines—some of them in present operation, and others ready to resume working.

The LIMESTONE QUARRY is worked by open cast, and is connected with the works by railway.

The FIRECLAY is abundant, of excellent quality, and cheaply produced.

The Glasgow, Paisley, Kilmarnock, and Ayr Railway (extending to Carlisle), passes close to, and has connection with, the furnaces—by means of which, and others in connection with it, the produce can be conveyed to the city and port of Glasgow (22 miles off), and to the seaports on the Ayrshire coast, each within a few miles of the works.

There is a large stock of calcined ironstone, coal, and limestone on the ground, so that the works may be put into immediate operation, and, under judicious management, the manufacture of pig-iron may be carried on to the greatest advantage. The concern will be found to be well worth the attention of persons having the requisite capital, and affords an opportunity of entering into the business seldom to be met with.

MALLEABLE IRON-WORKS.—Considerable progress has been made in the erection of extensive malleable works, which, when completed, will be capable of turning out 300 tons of bar-iron weekly. The most of the necessary machinery has been prepared by the contractors; and a portion of the work could be brought into operation in a few months to produce the half of the above estimate. This work is nearly adjoining the Pig Iron-Works, and connected by railway, and will be sold either together therewith or separately.

Plans of the property and mineral workings lie for inspection at the Ayrshire Iron Co.'s office, 113, St. Vincent-street, Glasgow, where, on application to Mr. Brown, every necessary information will be afforded, and orders given for inspection of the works.

N.B.—The purchaser of these works has an opportunity of, at the same time, acquiring the Mansion-house, Lands, and Minerals of Pitcon, immediately adjoining (the latter being part of those above referred to, as held in lease by the company), which are advertised to be sold at the same time and place.

VALUABLE ESTATE AND MINERAL FIELD IN AYRSHIRE FOR SALE.—TO BE SOLD, BY PUBLIC ROUP, within the Royal Exchange Sale Rooms, Queen-street, Glasgow, upon Wednesday, the 24th day of May next, at Two o'clock afternoon, unless previously disposed of by private bargain,

All and WHOLE the LANDS and ESTATE of PITCON, extending to about 216 acres, imperial measure, and comprehending the following lands—viz.: the Three Merk Land, of old extent, of NETHERMAINS of PITCON; the Two Merk Land, of old extent, of OVERMAINS of PITCON; the Two and One-Half Merk Land, of old extent, of LINTSEEDRIDGE; 6 acres 19 falls, or thereby, of the farm and lands of MIDDLETON, situated on the east side of the high road leading from Dairy to Kilbirnie; and one rood and 0 falls, or thereby, of the lands of KERSELAND, situated on the north or north-west side of the water of Garnock, with the teinds, parsonage, and vicarage of said lands; together with the MANSION HOUSE of PITCON, and OFFICES and GARDEN thereto belonging; and the whole MINERALS and METALS in the several lands above-mentioned; and whole privileges and pertinents belonging to the same; but, excepting these eight acres or thereby, Scotch measure, now belonging to the Glengarnock Iron Company, of their presently working seam of ironstone in the said lands; and also excepting the Pitcon Railway and branches, in so far as the same are within, and pass through, the said lands.

The MANSION HOUSE, which is pleasantly situated, and commands a most extensive view, is in good order and repair, and has attached to it a set of suitable and commodious offices, with walled garden, shrubbery, and pleasure-ground; and the whole are enclosed from the other portions of the estate by a high and substantially-built wall.

The LANDS (exclusive of those attached to the mansion house), let under lease, extend to about 140 acres Scotch, or thereby, and are at present held by a respectable tenant at a surface rent of £490 sterling per annum. The farm steading upon the lands is most substantially built, and in good order and repair.

The MINERALS, which have been ascertained to comprise the most valuable descriptions of ironstone, extend to about 140 acres still unwrought, and are held by the Ayrshire Iron Company upon a lease, at a present fixed rent of £1000 sterling per annum; or, in the option of the landlord, at a certain lordship, which has hitherto greatly exceeded the fixed rent, and yielded a very large yearly return. Upon a moderate calculation, the black-band yields about 3000 tons calcined ironstone to the imperial acre. There are, besides, in the course of being wrought on the lands, several seams of coal and other minerals.

The Estate of Pitcon is situated near to the village of Dairy, at which there is a station upon the line of the Glasgow, Paisley, and Ayr Railway, and in the immediate neighbourhood of the Ayrshire Iron Company's Works, with which it is connected by railway communication. This property will, in consequence, form a most desirable and profitable investment to the purchaser of the Ayrshire Iron Company's Works (the Blair Iron-Works), which, along with the benefit of the mineral lease of Pitcon, are advertised to be sold by public roup, at the same time and place with this estate.

The public and parish burdens payable from the estate are small; and whether regarded as in connection with the Ayrshire Iron Company's Works, or separately, there is seldom so desirable and eligible an investment as the present offered to competition.

For further particulars, application may be made to M'Clelland and M'Kenzie, accountants, 128, Ingram-street, Glasgow; Robert M'Cowan, accountant, 17, Gordon-street, there; Knox and Findley, writers, 59, St. Vincent-place, there; James M'Cosh, writer in Dairy; or, to Douglas and Ranken, writers, 91, St. George's-place, Glasgow, in whose hands the articles of roup and title deeds, and a plan of the estate and mineral workings, may be seen.

Mr. M'Cosh will give directions for the lands being pointed out, and the mansion house, offices, and garden, being shown to inquirers. BOGLE and Co., Auctioneers.

Glasgow, April 22, 1848.

TO BE SOLD, OR LET, a valuable COAL MINE, in the township of GREAT HARWOOD, in the county of Lancaster. The mine has been recently proved, and found to be 3 feet 2 inches in thickness, and of excellent quality; it is commonly called, or known, by the name of the UPPER MOUNTAIN MINE, and extends over about 1000 statute acres, which will be divided into suitable lots.

The property is situated between the towns of Blackburn and Clitheroe, and is intersected by a branch of the East Lancashire Railway.

A section of the borings may be seen, by applying to Mr. Boosie, Rufford-hall, Ormskirk; or to Mr. Whittle, coal viewer, Charnock Richard, Chorley—to either of whom proposals may be sent.

IMPORTANT TO CAPITALISTS.—TO BE SOLD, an excellent SLATE and SLAB QUARRY—VARIEGATED MARBLE and HONE QUARRY—COPPER and LEAD MINES—all situated on the same property, within a short distance of the shipping harbour of Portmadoc, Carnarvonshire.

A GENERAL STATEMENT.

The above works are situated on a farm called Croesawr-uchaf, in the parish of Llanfrothen, in the county of Merioneth, about seven miles distant from the shipping harbour of Portmadoc, and about two and a half from the railway of the Festiniog Slate Quarries to the port. They are near the celebrated quarries of Festiniog, which are well known throughout Europe; and it hath been ascertained, by competent judges, that this slate vein is a continuation of the very productive vein worked by the Welsh Slate Company at that place, of which Lord Palmerston and other noblemen are partners, which send about 500 tons per week of fine slate to the market. The vein is about 70 yards wide, and very advantageous for working, being situated on the brow of a hill, and the rubbish thrown down, where there is a depository of 200 or 300 yards deep for it, without causing any trespass. The quality is good, splits well, and is of a beautiful blue colour.—Slates of the largest size are made from it, and slabs also, of large dimensions. Thousands of fine slates, worked to sizes, and beautiful slabs, are now ready on the bank.

The proprietor has ascertained most positively that no other slate quarries in Wales can produce such beautiful specimens from so near the surface, and where so little money has been expended.

The MARBLE and HONE adjoins the slate quarry, and some splendid specimens of variegated marble and hone have been already made from it.

The COPPER and LEAD MINES are about a quarter of a mile from the slate quarry, and the metals are of superior quality, and likely to become very productive.

There is the greatest facility for carrying on operations at all the works, which may be done with little expense, as few or no machinery will be required. A sawing and planing engine may be worked by water, just below the quarry.

Satisfactory reasons will be given why it is sold.

For further particulars, and to treat for the same, apply (postage paid) to Mr. Richard Jones, printer and auctioneer, Dolgelly, North Wales, where specimens of the slates, marble, hone, copper, and lead, may be seen.

TWO GOOD OFFICES TO LET,—desirably situate in FLEET-STREET. Terms moderate.—Apply at the *Mining Journal* Office, No. 26, Fleet-street, opposite St. Dunstan's Church.

TO SMELTING COMPANIES AND OTHERS.—FOR SALE, a QUANTITY of FLUOR-SPAR, of superior quality.—Apply to James Wolferstan, East Tamar Consols, Beeralston, Devon.

TREWALLACK MINE.—TO BE SOLD, BY PRIVATE CONTRACT, an excellent ENGINE, for pumping or drawing, about 20-inch cylinder, in good condition, with a boiler of 10 tons.—For particulars, application to be made to Capt. John Lean, Camborne; or to Mr. H. Ellery, Truro.

N.B.—There are also several tons of pitwork—viz.: 18 pumps, 13-inch; 2 working barrels, 13-inch, nearly new, 2 doorpieces, and 2 windbores.

BLAENGWAWR STEAM COAL, CARDIFF—placed on the List of Coals supplied, by Contract, to the Government.—ORDERS for the BLAENGWAWR STEAM COAL RECEIVED by Mr. W. F. STANTON, No. 9, LOVE-LANE, EASTCHEAP; or by Mr. George Sully, agent, 1, Bute-street, Cardiff, Glamorganshire, South Wales.

W. NAISH, RAIL INSPECTOR, NEWPORT, MON.—W. N. has had many years' experience on the permanent railway as INSPECTOR; and, for many years past, has inspected rails in Wales and elsewhere. Satisfactory references can be given.

MINING OFFICES—Established Five Years.—THOMAS P. THOMAS begs to inform his friends and the public, that he has REMOVED from No. 18, Threadneedle-street, to No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON (late Messrs. Phillips and Tiplady's).

N.B.—Dealer in English and Foreign Funds, Mining, Railway, Gas, and other shares.

WILLIAM W. TAYLOR & CO., MINERAL SURVEYORS, MINING SHAREBROKERS, &c.,
No. 2, ROYAL EXCHANGE-BUILDINGS, LONDON.

MR. R. TREDINNICK, THREE KING'S COURT, *LOMBARD-STREET, LONDON,*
Continues to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

JAMES LANE, MINING SHARE DEALER, 75, *OLD BROAD-STREET, LONDON.*

WILSON & FRASER, 2, WELLINGTON-BUILDINGS, LIVERPOOL, and 13, EXCHANGE-PLACE, GLASGOW, have always ON SALE PIG-IRON, BAR-IRON, RAILWAY CHAIRS, and RAILWAY BARS.

MONEY.—MESSRS. KILLICK & CO. (late Winstanley, Killick, & Co.), SHAREBROKERS, inform their friends and the public, they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms: they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.

6, Bank Chambers, opposite the Bank of England.

BANWEN IRON COMPANY—Established 1846—for WORKING the IRON MINES on the BANWEN ESTATE, in the neighbourhood of SWANSEA, Glamorganshire. The mines are now in work, and further CAPITAL being REQUIRED for erecting additional FURNACES, a portion of the reserved shares of £6 each may now be had, on application at the offices of the company. A deposit of £2 per share to be paid down, and the remainder by two instalments, at intervals of two months. This company offers peculiar advantages, and the profits are estimated to return a dividend of 25 per cent. S. P. HARRIS, Secretary.

Offices, 23, Threadneedle-street.

CAMBORNE CONSOLS MINING COMPANY.
TEMPORARY OFFICES,—*No. 14, FISH-STREET-HILL.*
London, April 25, 1848.

CORNISH MINING COMPANY.—OFFICES, No. 15, *MONUMENT CHAMBERS, LONDON.*

GENERAL MINING COMPANY FOR IRELAND, Office, 2, Burgh-quay, Dublin, May 1, 1848.—Notice is hereby given, that a HALF-YEARLY GENERAL MEETING of the proprietors will be HELD at the office of the company, 2, Burgh-quay, Dublin, on Monday, the 5th day of June next, at the hour of Eleven o'clock in the forenoon, to receive the half-yearly accounts, up to the 30 of April last, and the auditors' report thereon, and to transact the general business of the company, and to elect two auditors of the company for the ensuing year—the ballot for which will commence at Eleven o'clock in the forenoon, and close at three o'clock in the afternoon of the above day. THOMAS MAGUIRE, Secretary.

WHEAL BULLER (otherwise Great South Tolgus) MINING COMPANY.—Notice is hereby given, that the HALF-YEARLY GENERAL MEETING of the proprietors in this undertaking will be HELD at No. 3, Clayton-square, Liverpool, on Tuesday, the 23d inst., at Five o'clock in the evening.

By order, F. A. TAMPLIN, GEO. WOOD, } Directors.
Liverpool, May 2, 1848. E. YATES, Secretary.

VALUABLE SEA-SALE COLLIERIES TO BE LET.—TO BE LET, and entered upon on the 1st of July next, the valuable current-working COLLIERIES of EVENWOOD and NORWOOD, in the county of Durham.

These collieries are situated upon the line of the Stockton and Darlington Railway, by which the coals are conveyed to the shipping ports of Stockton and Middlesborough; and also, by means of this, and the York and Newcastle, and Leeds and Thirsk Railways, the coals have access to the important land-sale trade of Northallerton, Thirsk, Ripon, York, the lead-mining districts, and other towns in Yorkshire, and for shipment on the Ouse; and, by means of the proposed Northern Counties Union Railway, with the important land-sale trade of the western parts of Yorkshire and Westmoreland.

The royalties are very extensive. Two seams of coal are in working—one upwards of 6 feet, and the other of 3 feet. The pits are at a moderate depth from the surface, and the coal is worked at an exceedingly cheap rate, and is much prized as a household coal, both for export and land-sale.

The entering tenant has the option of taking what stock he may require, at a valuation; and the amount of capital required to enter upon the collieries will be of very small amount.

For particulars apply to Thomas Wheldon, Esq., Barnard Castle; or to Nicholas Wood, Esq., Newcastle-upon-Tyne.—Newcastle, March 3, 1848.

TENDERS FOR WELSH COAL AND NORWAY TIMBER.—TENDERS may be FORWARDED to ME, on or before the 1st proximo, for SUPPLYING from TWO THOUSAND to THREE THOUSAND TONS as may be required, of WELSH COAL, of the best quality, for STEAM-ENGINES, to be delivered over the ship's side, at Looe, on a wharf, or into barges, between Midsummer, 1848, and Midsummer, 1849, in about equal quantities monthly, and so that the mines for which the coal is wanted shall be kept constantly supplied; in default of which, and also of the quality being the best, the extra cost (above the contract price), of obtaining a supply elsewhere, to be charged to the contractors. The mode of payment to be by acceptances at the end of three months from the times the accounts are audited (once in two months).

TENDERS may also be FORWARDED to ME, on or before the 1st proximo, for SUPPLYING the following mines—viz.: West Caradon, Gonamena, Craddock Moor, Wheal Sisters, and Wheal Mary Consols, for 12 months, from Midsummer next, with NORWAY TIMBER, half Dram and half Longsound, of good quality and average lengths, to be delivered at the respective mines free of expense, in such quantities as may be required, and when required, and to be charged at the measurement on which the duty has been paid. Any mine, or mines, may be tendered for separately.

Should the agents not approve of the quality of any timber sent in, the contractors to remove the same; and, at the option of the respective adventurers, either to replace it by an article of approved quality, or submit to a deduction from their bills of the amount of difference between the contract price and that at which the adventurers may obtain a supply from some other party; also, the amount of the like difference to be deducted from the contractors' bills in respect of timber purchased elsewhere, in consequence of the contractors not sending in supplies when and as required. Payment for timber by acceptance, at four months, from time of the bills being audited by the adventurers at their two-monthly meetings. EDWARD A. CROUCH.

Liskeard, 1st of fifth month (May), 1848.

ASSAYING AND ANALYSIS.—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, metallurgical and manufacturing, at his LABORATORY,

23, *HAWLEY-ROAD, KENTISH TOWN, LONDON,*

to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

ADCOCK'S PATENT SPRAY PUMP.—This important INVENTION having been PERFECTED, and brought into SUCCESSFUL PRACTICAL OPERATION, the PATENTEE is ready to RECEIVE, and to execute, ORDERS.—Apply to Henry Adcock, C.E., at his offices, No. 2, Moorgate-street, London, where pamphlets, descriptive of the invention, may be had; at the office of the *Mining Journal*, 26, Fleet-street; and through any respectable bookseller—price 6d.

RAILWAYS.—The first railway or tramway on which a steam-engine was employed for locomotive purposes was the Merthyr tramway, in the year 1805. The engine was built by Trevitheck and Vivian, and at the first trial drew a train of waggons, containing 10 tons of iron, and a considerable number of persons, at the rate of five miles an hour.—*Mechanics' Magazine.*

ELECTRIC TELEGRAPH WIRE.—The best method of covering wire for galvanic and other purposes is the patented process of Mr. W. Reed, which is, we believe, adopted by the Electric Telegraph Company.—*Mechanics' Magazine.*

ECONOMICAL PROCESS OF MAKING BICHROMATE OF POTASH FROM THE CHROMATES OF LEAD AND THE BICHROMATE OF LIME.—This process was performed, for the first time, in June, 1845, upon a quantity of 10 kils., at the establishment of M. Guerin, late Professor of Chemistry in the Norman School. Afterwards, in the month of September, in the same year, the experiment was repeated with 50 kils. of chrome ore, near Rouen, by M. Maze, manufacturer of soda, and one of our most skilful operators. M. Allain, on his part, published in November, 1846, in the *Revue Scientifique*, a process which resembles mine, so far as regards some of the primary materials; but that which I am now about to set forth differs from the preceding in the details of execution, and in the study of the principal phenomena, a perfect knowledge of which is inseparable from all industrial enterprise. The following is an explanation of the process:—1. Mix together, in casks revolving upon their longer axis, chalk and chrome ore, previously reduced to a very minute state of division. This tenuity of the ore may be obtained by pulverisation, and then passing it through a very fine sieve; for it is important, above every other consideration, to have an impalpable powder, for reasons which will be presently shown.—2. Calcine this mixture for 9 or 10 hours, at a lively red heat, upon the hearth of a reverberatory furnace, taking care to spread it to a thickness of 5 or 6 centimetres, and to stir it well 10 or 12 times with a rake or poker. At the end of this time, if the flame has been sufficiently oxidating, the conversion of the oxide of chrome into chromate of lime will have been accomplished. This may be ascertained—first, by the appearance of the material, which will be of a yellowish green colour;* and next, by its having the property of dissolving completely in hydrochloric acid, with the exception of the sandy portion.—3. Having proceeded thus far, the material, now very friable and porous, is next ground fine, and diluted with warm water. The liquid mass is constantly stirred, while sulphuric acid is added until the liquor will slightly redden blue litmus paper. This character is an indication of the total conversion of the chromate of lime into a bichromate, and of the formation of a little sulphate of the sesquioxide of iron.—4. Diluted chalk is then added, little by little, to the liquor, until the sesquioxide of iron is completely eliminated. In this the bichromate of line undergoes no change as to its condition of saturation.—5. After remaining a short time at rest, the supernatant clear liquor is drawn off—this contains only the bichromate of lime, with a very little sulphate of lime. In this condition it may be immediately used for the production of bichromate of potash, the neutral or basic chromates of lead, and even the chromates of zinc, of which the approaching use may be foreseen, inasmuch as the oxide of zinc has already been so happily substituted for the carbonate of lead in white oil painting. It will be seen from the preceding, that it is not necessary to use the bichromate of potash in order to obtain the insoluble chromates of lead, zinc, baryta, &c., and this should bring about a great economy in the preparation of these articles. It is sufficient, therefore, to produce a double decomposition between the bichromate of lime and the acetate, the sub-acetate of lead, the chloruret of zinc, and so on of others. With regard to the bichromate of potash, it is produced not less easily, nor less pure, by causing a reaction of a solution of carbonate of potash freed from soda, upon the bichromate of lime—from which results an insoluble carbonate of lime, easily washed, and bichromate of potash in solution, which must be concentrated and crystallised under protection from dust, and all access of hydrochloric acid.—M. V. A. JAQUELAIN: *Comptes Rendus.*—[* This singular peculiarity of the chromate of lime with an excess of base, of preserving the green tint of the oxide of chrome, gave rise to the belief, for a long time, that it was not produced by the chromate of line, and the more so, as this chromate is hardly soluble in water.]

A DESPERATE WOUND IN THE THIGH CURED BY HOLLOWAY'S OINTMENT AND PILLS.—Extract of a letter from Mr. J. S. Munday, farmer, residing at Kennington, near Oxford, dated March 31, 1848.—"To Professor Holloway.—Sir,—Having received a wonderful cure by the application of your ointment to a dreadful wound in my thigh, and from which I had long suffered, I feel it my duty to acknowledge the speedy and extraordinary effects produced by your valuable ointment and pills in my own case—having previously used several other remedies without success. I have also had various opportunities of witnessing the beneficial results attending their use among my labourers."—Sold by all druggists; and at Professor Holloway's establishment, 244, Strand, London. 30

ON NERVOUS DEBILITY AND GENERATIVE DISEASES.

Just published, the thirty-fifth thousand, an improved edition, revised and corrected, 120 pages, price 2s., in a sealed envelope, or forwarded, post-paid, by the Authors, to any address, secure from observation, for 2s. 6d., in postage stamps, illustrated with numerous anatomical coloured engravings, &c.

MANHOOD: the CAUSES of its PREMATURE DECLINE, with plain directions for its perfect restoration. A Medical Essay on those diseases of the Generative Organs, emanating from solitary and sedentary habits, indiscriminate excesses, the effects of climate, and infection, &c., addressed to the sufferer in youth, manhood, and old age; with practical remarks on marriage, the treatment and cure of nervous and mental debility, impotency, syphilis, and other urino-genital diseases, by which even the most shattered constitution may be restored, and reach the full period of life allotted to man. The whole illustrated with numerous anatomical engravings on steel, in colour, explaining the various functions, secretions, and structures of the reproductive organs in health and disease; with instructions for private correspondence, cases, &c.—By J. L. CURTIS & CO., consulting surgeons, 7, Frith-street, Soho-sq., London. 30

REVIEWS OF THE WORK.

We feel no hesitation in saying, that there is no member of society by whom the book will not be found useful—whether such person hold the relation of a parent, preceptor, or a clergyman.—*Sun*, Evening Paper.

Curtis, *On Manhood.* (Strange).—Having for many years been the standard work on these diseases, its originality is apparent, and its perusal breathes consolation and hope to the mind of the patient.—*Naval and Military Gazette.*

Manhood: a medical work.—To the gay and thoughtless we trust this little work will serve as a beacon to warn them of the danger attendant upon the too rash indulgence of their passions—whilst to some it may serve as a monitor in the hour of temptation, and to the afflicted as a sure guide to health.—*Chronicle.*

Manhood: by J. L. Curtis and Co.—Their long experience and reputation in the treatment of those painful diseases is the patient's guarantee, and well deserves for the work its immense circulation.—*Era.*

Published by the authors, and may be had at their residence; sold also by Strange, 21, Paternoster-row, London; Heywood, Oldham-street, Manchester; Philip, South Castle-street, Liverpool; Robinson, 11, Greenside-street, Edinburgh; Berry and Co., Capel-street, Dublin; and, in a sealed envelope, by all booksellers.

Illustrated by 26 Anatomical Coloured Engravings on Steel, On Physical Disqualifications Generative Incapacity, and Impediments to Marriage. New Edition, enlarged to 196 pages.—Just published, price 2s. 6d., or by post, direct from the establishment, 3s. 6d. in postage stamps.

THE SILENT FRIEND: a medical work, on the infirmities and decay of the generative system, from excessive indulgence, infection, and the inordinate use of mercury, with remarks on marriage, and the means of obviating certain disqualifications, illustrated by 26 coloured engravings. By R. & L. PERRY & Co., 19, Berners-street, Oxford-street, London. Published by the authors; sold by Strange, 21, Paternoster-row; Hannay, 63, and Sanger, 150, Oxford-street; Starie, 23, Titchborne-street, Haymarket; and Gordon 146, Leadenhall-street. 31

PART THE FIRST treats of the anatomy and physiology of the reproductive organs, and is illustrated by six coloured engravings.—PART THE SECOND treats of the consequences resulting from excessive indulgence, and their lamentable effects on the system, producing mental and bodily weakness, nervous excitement, and generative incapacity; it is illustrated by three explanatory engravings.—PART THE THIRD treats of the diseases resulting from infection, either in the primary or secondary form, and contains explicit directions for their treatment. The consequences of neglect, and of the abuse, of mercury are also clearly pointed out. This section is illustrated by 17 coloured engravings.—PART THE FOURTH treats of the prevention of disease by a simple application, by which the danger of infection is obviated. Its action is simple, but sure. It acts with the virus chemically, and destroys its power on the system. This important part of the work should be read by every young man entering into life.—PART THE FIFTH is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subject critically and philosophically inquired into.

THE CORDIAL BALM OF SYRIACUM is exclusively employed in treating nervous and sexual debility, impotence, &c., 11s. and 33s. per bottle.—THE CONCENTRATED DETERSIVE ESSENCE, an anti-syphilitic remedy, for purifying the blood in cases of infection, secondary symptoms, eruptions, and the abuse of mercury, 11s. and 33s. per bottle.—PERRY'S PURIFYING SPECIFIC PILLS, 2s. 9d., 4s. 6d., and 11s. per box—a certain remedy in gonorrhœa, gleet, strictures, and chronic inflammation of the bladder.—Consultation fee, if by letter, £1. £5 packets, with advice, to be had at the establishment only, by which the fee, £1, is saved.—Attendance daily at 19, Berners-street, from 11 to 2, and 5 to 8; on Sundays, from 11 to 1.

Sold by Sutton and Co., 10, Bow Churchyard; W. Edwards, 67, St. Paul's Churchyard; Barclay and Sons, Farringdon-street; Butler, 4, Cheapside; R. Johnston, 63, Cornhill; L. Hill, New Cross; W. B. Jones, chemist, Kingston; J. W. Tanner, Egham; S. Smith, Windsor; J. B. Shillock, Bromley; T. Riches, London-street, Greenwich; T. Parkes, Woolwich; Ede and Co., Dorking; and John Thurlby, High street, Romford—of whom may be had the *Silent Friend.*

REMOVED TO No. 37, BEDFORD-SQUARE, LONDON.

DR. LA'MERT ON THE SECRET INFIRMITIES OF YOUTH AND MATURITY, With 40 coloured engravings on steel.

Just published, and may be had in French or English, in a sealed envelope, 2s. 6d.; or post-free, from the author, for forty-two stamps.

SELF-PRESERVATION: A Medical Treatise, on the Physiology of Marriage, and on the Secret Infirmities and Disorders of Youth and Maturity, usually acquired at an early period of life, which enervate the physical and mental powers, diminish and enfeeble the natural feelings, and exhaust the vital energies of Manhood; with Practical Observations on the Treatment of Nervous Debility, whether arising from these causes, close study, or the influence of tropical climates; local and constitutional weakness, syphilis, stricture, and all diseases and derangements resulting from indiscretion; with 40 coloured engravings, illustrating the Anatomy, Physiology, and Diseases of the Reproductive Organs, explaining their various structures, uses, and functions, and the injuries that are produced in them by solitary habits, excesses, and infection. 32

BY SAMUEL LA'MERT, M.D., 37, BEDFORD-SQUARE, LONDON.

Doctor of Medicine, Matriculated Member of the University of Edinburgh, Licentiate of Apothecaries' Hall, London, Honorary Member of the London Hospital Medical Society, &c.

REVIEWS OF THE WORK.

"The author of this singular and talented work is a legally qualified medical man, who has evidently had considerable experience in the treatment of the various disorders, arising from the follies and frailties of early indiscretion. The engravings are an invaluable addition, by demonstrating the consequences of excesses, which must act as a salutary warning to youth and maturity, and by its perusal, many questions may be satisfactorily replied to, that admit of no appeal, even to the most confidential friend."—*Era.*

"Unquestionably this is a most extraordinary and skilful work, and ought to be extensively circulated; for it is quite evident that there are peculiar habits acquired at public schools and private seminaries, which are totally unknown and concealed from the conductors of those establishments, and which cannot be too strongly reprobated and condemned. The engravings that accompany the work are clear and explanatory; and being written by a duly-qualified medical practitioner, will, doubtless, be the means of saving many a youth, as well as those of maturer age, from the various evil consequences resulting from early indiscretions."—*Magnet.*

Sold by Kent and Richards, 82, Paternoster-row; Hannay, 63, Oxford-street; Starie, Tichborne-street, Haymarket; Mansell, 115, Fleet-street; Gordon, 146, Leadenhall-street; or free by post, for 42 stamps, from the author's residence, who may be consulted personally (or by letter) on these disorders daily, from 10 till 2, and from 5 till 8.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

MONDAY	Geographical—3, Waterloo-place	8½ P.M.
	Medical—Bolt-court, Fleet-street	8 P.M.
TUESDAY	Medical and Chirurgical—53, Berners-street	8½ P.M.
	Civil Engineers—25, Great George-street	8 P.M.
	Zoological—11, Hanover-square	9 P.M.
	Syro-Egyptian—71, Mortimer-street, Cavendish-square	7½ P.M.
WEDNESDAY	Graphic—Thatched-house Tavern	8 P.M.
	Society of Arts—Adelphi	8 P.M.
THURSDAY	Royal—Somerset-house	8½ P.M.
	Antiquaries—Somerset-house	2 P.M.
	Royal Society of Literature—4, St. Martin's-place	3 P.M.
	Medico-Botanical—32, Sackville-street	8 P.M.
FRIDAY	Royal Institution—Albemarle-street	8½ P.M.
	Astronomical—Somerset-house	8 P.M.
	Philological—12, St. James's-square	8 P.M.
SATURDAY	Asiatic—14, Grafton-street	2 P.M.
	Royal Botanic—Inner Circle, Regent's-park	3½ P.M.

INSTITUTION OF MECHANICAL ENGINEERS.

The usual quarterly meeting of this institution was held on Wednesday, the 26th of April, in the theatre of the Philosophical Institution, Birmingham, for the reception of papers, and discussions thereupon.

GEORGE STEPHENSON, Esq., president of the society, in the chair.

Amongst the members present were Mr. Fothergill, Manchester; Mr. M'Connell, London and North-Western Railway; Mr. Cowper, London Works; Mr. Peacock, Leeds and Manchester Railway; Mr. Jackson; Mr. Buckle, Soho; Mr. Slate, Smethwick; the Mayor, Charles Geach, Esq.; Mr. Ramsbottom; Mr. Wright, Saltley; Alderman Thornton; Mr. Crampton, London; Mr. Clift, Staffordshire Gas-Works, &c.

The PRESIDENT, in a few remarks, opened the meeting, by congratulating the members on the state of the society, and expressing the pleasure he felt in meeting so many of the mechanical engineers of England. The first business transacted was the reception of a paper—

ON FITTING-UP OF CYLINDERS FOR LOCOMOTIVE-ENGINES.

In the absence of Mr. Beyer, Mr. FOTHERGILL proceeded to describe the machine introduced at the last meeting, but the consideration of which was not then entered upon. Its object is to attain a uniformity in the make, bore, and general size of cylinders, so that, in the event of an accident to any, they may be replaced by spare ones. To accomplish this difficult task, the machine now described was invented. The description of this machine, which would require diagrams to make it intelligible, is briefly this:—The bed upon which it is placed is that of a common slide-lathe, sufficiently long to carry a double set of driving-gear, and admitting of the sufficient traverse of the boring-carriage. The boring-bar is supported by three bearings, the former of which is stationary, and firmly fixed to the bed, to resist the end pressure of the cut when boring; the latter are fixed upon the carriage, and travel with it along the boring-bar. To cause the boring-carriage to move edgeways, a train of wheels descend at the back of the machine to give motion to the shaft, and are transfixed, by means of a feathered worm, to the worm-wheel and pinion, both of which move loose upon a fast stud of the carriage; this same stud serving as a fulcrum for a lever, carrying, upon two opposite projections, the intermediate pinions. To hold the cylinders while boring, the top of the carriage is formed into a kind of square panel, by means of two plates, planed on the inside, and fastened to the sides of the bearings, and two cross-stretchers. These latter are also planed upon their inner faces, and are secured to the sides and top of the boring-carriage, and have holes bored in them when secured in their places, by means of the bend on the bar, corresponding in diameter to the turned projecting ends of the cylinder to be bored. This arrangement is for the purpose of securing uniformity between the external and the internal surface, so that the cylinder be fairly perforated, without the dangerous fault of thick and thin sides. Mr. Fothergill proceeded to explain the diagrams which accompanied the paper, and remarked that, without offering any criticism on the machine, which appeared to him to be admirable for its purpose, he would merely direct the attention of the members to the great advantages which such an invention must confer on those by whom these cylinders were used. Say, that one of those in use split, by this machine they had the defect supplied immediately.—Mr. M'CONNELL also bore testimony to the advantages of a uniformity of cylinder. An accident occurred to one of the cylinders in use on the line with which he was connected. An order was forthwith despatched to Manchester, and in three days he had another, which fitted exactly the place occupied by the other.

The members, generally, concurred in the commendation of the machine.

ON THE FORMATION OF TEETH OF DRIVERS OF PIN-WHEELS.

Mr. KINTRAE read a paper, contributed by F. Basforth, M.A., fellow of St. John's College, Cambridge, descriptive of a machine for forming the teeth of wheels. The paper was accompanied by a model. Referring to Prof. Willis's demonstrations, that the proper form for the teeth of spur-wheels is a compound of portions of epicycloids and hypocycloids, he remarked that no self-acting machinery had been applied to give those forms to metal wheels when mounted on their axes. The principle of the invention submitted to the institution was the well-known one, that if the pins be supposed to be mathematical lines, the proper forms of the teeth of the driver will be portions of the epicycloids, described by a point in the circumference of the pitch circle of the pin-wheel, when caused to roll on the pitch circle of the driver. The tracer being replaced by a cylindrical cutter, this, as it revolves on its own axis, will form with accuracy the interval between the two teeth of the driver. By turning the wheel to be cut through the proper angle, the interval between the next two teeth will be formed, and so on till the whole be completed. He proposed that the pins should be formed in two parts; a solid cylinder surrounded by a tube of of iron; and when the tooth of the driver came in contact with the outer case of the pin, it would revolve through a small angle, and thus all abrasion of the teeth of the driver would be avoided.

Mr. M'CONNELL was unable to see wherein the model before them differed from the plan now in use. In fact, it was nothing more than the old cog and drum plan. Probably the idea occured to the inventor without any knowledge of the existing machines, and, if so, he deserved commendation for his ingenuity.—Mr. COWPER could not entirely agree with Mr. M'Connell. The teeth, by this machine, were made by a given mathematical rule. That was the only self-acting machine he had seen that struck a real epicycloid.

Mr. FOTHERGILL was unable to see anything in the machine practically different to those longer in use. If, however, the inventor was an amateur, great credit was due to him for the inventive ability he had displayed in the model before them.

CRADDOCK'S BOILER AND CONDENSER.

Mr. T. CRADDOCK, of Birmingham, read the following paper on his boiler and condenser—their suitability for extending the Cornish economy, and preventing boiler explosions:—

In submitting to the meeting the subject of this paper, it appears desirable to call attention to the well-established practical data, from which, by the Cornish system of generating and using steam, such economical results have been obtained. To this end, a very brief review of the various laws, or principles, immediately bearing upon the subject, seems to be essential for placing the matter in its proper light before the meeting. For this purpose, perhaps the classified mode is the preferable one.

1. We have to do with the laws by which heat is transmitted from hotter to colder bodies, and *vice versâ*. These demand in our steam-boilers and condensers an extensive surface; and, as far as other circumstances will allow of, that such surface be composed of thin metal. It is further necessary, if we would produce the greatest economy in the generation of steam, that the heat produced in the furnace be, to as great an entent as possible, absorbed by the water; this is best effected by a subdivision of the gases by a slow draught, and by completely surrounding the combustible matter in the furnace by the water in the boiler.

2. The hydrostatic laws require, in order to render high-pressure steam equally safe from explosion as low-pressure, that we diminish the sectional area of the interior surface of the boiler, upon which the pressure of the steam acts, in the same ratio as we increase its pressure. If we do this, then, the rending force, tending to burst the boiler, remains the same at whatever pressure the steam be generated.

3. The laws relating to latent and sensible heat, when considered in combination with large volumes of water, and subjected to the casualties attending the steam-engine, suggests the diminishing the quantity of water necessary in steam-boilers, as far as practical circumstances will permit, as one of the surest means of preventing destructive boiler explosions. The importance which attaches to the suggestions these laws present becomes apparent, when we consider the effects in case of explosion, which such an amount of sensible heat produced, as that contained in the large volume of water necessitated in boilers of 60-horse power, for instance, and of the usual construction, as the sensible heat contained in so large a volume of water would, supposing the pressure of the steam to diminish from 40 lbs. to 20 lbs. per square inch, generate a volume of steam, at 20 lbs. pressure, equal to 30,000 cubic feet. Here we have a cause equivalent to the diffusive and destructive effects exhibited in common and large boiler explosions. The boiler, to which this paper refers, reduces the danger from this cause nine-tenths, though the steam be generated in it at a temperature and pressure of 100 lbs. per square inch. In this case we find the sensible heat, contained in the water required by such boilers, would give but 3000 cubic feet of steam at 20 lbs. pressure. The boiler under consideration is equally successful in diminishing the risk from explosion, arising from the rending strain due to the pressure of the steam—as, on a comparison with the common boiler, in which we suppose the steam at only 36 lbs. pressure, the rending force in such common boiler is 5400 lbs.; whilst in the tubular, even with 100 lbs. pressure, the rending force amounts only to 900 lbs., or but one-sixth of that given in the instance of the common boiler. The most obvious and certain conclusion to which such well-established principles lead, cannot fail to show how ill-grounded and unscientific must be the objections raised against high-pressure steam, when generated in such boilers.

4. The laws relating to the expansive action of steam plainly indicate the importance of the two leading features of the matter before the meeting—viz.: that of removing the atmospheric pressure from the exhaust side of the piston on the one hand, and, on the other, enabling us to make use of high-pressure steam with safety; as by the removal of the atmosphere in non-condensing engines, an economy is produced by this cause alone equal to 38 per cent.; and, by increasing the pressure of the steam at the commencement, can be obtained a further increased economy, upon the Cornish system, equal to 40 per cent.

[Mr. Craddock here described, by means of plans, his Boiler and Condenser.]

Considerable discussion ensued upon the reading of this paper; the principal objections to the conclusion said to be arrived at were those raised by Mr. M'CONNELL. It was asked by him, if any trial had been made with the engine in actual work?—Mr. CRADDOCK replied, that the trial he deemed most proper to submit to the meeting was that made at the London Works (Smethwick), because it must be free from all suspicion; and that to the authenticity of the indicator figures taken off the engine when there, he had no doubt Mr Cowper would satisfy the meeting.—Mr. COWPER said, he had taken some indicator figures off the engine, and that it was then doing 20-horse power—that is, indicator horse-power; the condenser then took 1½-horse power to work it.—M'CONNELL then raised an objection, that the engine was not tested with the other engines working at the London Works.—Mr. CRADDOCK replied, that he had always expressed a wish that it should be so tested, but the firm not intimating its assent, it was not for him (Mr. C.) to insist upon anything of the kind.—Mr. Stephenson, Mr. M'Connell, and Mr. Buckle said, that the test of pumping water, or some such work, was the best test of power.—Mr. CRADDOCK replied, that he was a little surprised that Mr. Buckle, the representative of an ancient and eminent firm, should object to the indicator as a fair test of the power of the engine, when it was well known that the indicator was the instrument used by them to test the power of their own engines.—It was argued by Mr. CRAMPTON, that the only advantages the double-cylinder engine possessed over the single one was greater steadiness of motion; but this did not compensate for the loss of power, which, he considered, arose from the use of two cylinders, in the steam passing from the one piston to the other. Some time ago, he had made some elaborate experiments upon that very subject, and his conclusions then were, that the loss amounted to 14 per cent.—Mr. CRADDOCK replied to Mr. Crampton, by admitting a loss in the expansion, which took place between the two pistons; but, in the small engine before the meeting, it was obvious that this was reduced to the smallest possible amount: he further called Mr. Crampton's attention to the great irregularity of motion that would result by carrying the expansive principle to a great extent in one cylinder. Mr. Craddock here referred to an experiment made on the previous evening with the small engine before the meeting; it was scarcely necessary for him to remind the meeting, that in so small an engine, when first started, the friction was considerable; yet it had worked up to its speed, with the steam cut off at 1-60th of the stroke.—Mr. CRAMPTON replied, that the steam would lose all its power before expanding to such an extent.—Mr. CRADDOCK said, if Mr. Crampton would favour him with a call at the works, he would show him the fact experimentally. He wished further to remind the meeting that, from his own experiments, he was convinced that, by admitting high-pressure steam direct from the boiler into one cylinder, much of it was condensed by the comparatively cold metal of such cylinder; and that the water resulting therefrom, being in contact with the metal of the cylinder, did, when placed in communication with the condenser, again assume the form of steam, thereby uselessly carrying much heat from the boiler to the condenser, without producing mechanical effect. But, as he had stated his views upon this subject elsewhere, and as it may appear to the meeting a somewhat abstruse subject, if not an hypothetical one, he would not trespass upon the meeting by any further remarks upon it.—Mr. M'CONNELL said, that he was somewhat surprised that, after the length of time which Mr. Craddock had devoted to the subject under discussion, he had not arrived at some more accurate data, and had not made up his mind as to the real capability and comparative advantages of his boiler.—Mr. CRADDOCK replied, that although he had certainly devoted much time to the practical consideration of the subject, he had not directly deduced such accurate data as would justify him in stating definitely the comparative merits as to economy of coals in the generation of a given weight of steam; but, nevertheless, if Mr. M'Connell would favour him with a call at the works, he had no doubt he should be able to show him, that he had not been idle, but that he had been driving after great points, knowing full well that on these depended the economy.

Mr. M'CONNELL said, that it appeared to him that the condenser was most valuable for marine purposes.—Mr. CRADDOCK replied, that its advantages for such purposes may be stated in a few words, as the condenser would ensure water, free from deposit, for the use of the boiler, thereby rendering tubular boilers practicable, they enabling us to generate high-pressure steam with safety; and thus, by carrying out the expansive principle, with other consequent advantages, a saving of 2,000,000*l.* sterling per annum may be effected in our steam navy.—Mr. JACKSON proposed, that in order to test the relative value of the single and double cylinder engine, and set that question at rest—at least so far as that society was concerned—Mr. Crampton be requested to prepare a paper and diagrams on the subject, to be laid before the members at a subsequent meeting.—Mr. CRADDOCK suggested, that a more conclusive test would be that of an engine having two cylinders, one of which could be readily thrown out of action; its being connected with the same boiler, expanding the steam to the same extent, and performing the same work—the steam and coal required, in both cases, being accurately weighed—would give the most satisfactory solution.—The request to Mr. Crampton being carried unanimously, he (Mr. Craddock) consented to comply with such request.

HYDRAULIC STARTING APPARATUS.

Mr. FOTHERGILL read a paper, contributed by Mr. Jackson, descriptive of a hydraulic apparatus, for connecting heavy machinery, and disengaging the same from the prime mover, without producing those sudden shocks which the use of ordinary clutchers occasion. The principle of the machine is—A level pinion is supposed to be connected with the engine, or other prime mover, and gears into a bevil wheel, to which is cast a rim, which is turned internally. The wheel turns loose upon a shaft, being lined with a brass bush; the shaft, however, is provided with four projections, through each of which a hole is bored—the centre lines of these holes lying in one horizontal plane, and meeting in one common central chamber. In these holes four rams, which are respectively cast of one piece, with blocks, are fitted, the blocks being lined with copper, and turned, so as to fit the internal surface of the rim. Supposing that the machinery, which is assumed to be connected with the shaft, required to be started, hydraulic pressure is applied to the under rams, by pressing the ram which is in the shaft down upon a column of water, also contained in the shaft and the common central chamber, by means of a fly-wheel, which, with its nut and a screw, forms one piece with the ram—this ram, the nut, and screw, being guided and supported by a brass box, which is screwed into the upper end of the shaft. It is evident, that on the ram in the shaft being thus pressed down, the under rams will gradually and simultaneously press the segments against the internal surface of the rim, with a power proportionate to the force applied at the circumference of the fly-wheel, until the friction produced by such pressure shall be equal to the resistance of the machine to be set in motion. The machine will, therefore, gradually assume the velocity, which, according to the speed of the driving-shaft, it ought to have; at the same time, that any extraordinary momentary resistance, such as might be supposed to occur occasionally in rolling-mills, or other machinery of a similar nature, instead of causing the wheel to break, will have a tendency to make the rim to slip on the segment until the obstacle be removed, or overcome. In order, however, that too great a pressure may not be applied to the lower rams, the upper one and the screw are perforated with a small opening, the extremity of which is closed by a valve, acted upon by a spiral spring, encased in the brass box—so that if, at any time, the pressure exerted upon the rams should exceed that to which the spring is regulated, the water would lift the valve, and escape through it into the box, and through an opening in the lid of the latter into the atmosphere, until the balance of the pressure was again established.—Mr. M'CONNELL wished to know, whether there was any other means than that supplied by the safety-valve, if he might so call it, whereby the maximum of pressure could be ascertained.—Mr. FOTHERGILL remarked that, in fact, the machine was a self-acting regulator. A certain amount of resistance was required to make the rams work, and whenever the resistance became too great, the spring and the valve carried off the superfluous power.—It was resolved by several of the members, that the one seemed to answer every purpose which this machine was intended for; but it was argued by Mr. Fothergill, that Mr. Jackson's machine removed the greatest objection to the use of the cone—viz., the backward pressure. By the present invention, the pressure was confined altogether to the direction in which it was wanted. Several other members expressed themselves highly pleased with the machine; and

after a vote of thanks had been passed to Mr. Jackson, it was resolved to print the communication, and lithograph the diagram, for the use of the members.

PATENT SAFETY BUFFER.

Mr. BUCKLE, in introducing Mr. Chesshire's invention to the notice of the meeting, took occasion to express his satisfaction with the principle of the machine, which, with the spiral break of the worthy president, would, he conceived, be the means of saving many valuable lives on railways. In a former notice of the proceedings of the institution, we have briefly described the principle of the invention. It is proposed that each railway carriage should be supplied with a strong moveable rod of iron, solid or otherwise, as might be deemed advisable, supported in the centre of the under framework by bearing sockets. This rod is merely to have an "endway" motion, and is to have a head at each end, similar to the present side buffers, although it is not intended that these heads should act against each other, except in case of collision. When the carriages are screwed up into their ordinary travelling state, there will be a space between the safety buffers of some few inches, which would permit the independent action of the side buffers. This safety buffer would be placed in the "van" at the end of the train, and also in the tender in front—so that it cannot have an endway motion, farther than being fixed against strong elliptical springs will admit of, if such springs should be considered advisable. It was shown, by experiments on a small model railway, that the effect of this continuous buffer was exactly that which its inventor claimed for it. A train of carriages supplied with the rods was brought into collision with an ordinary train; and while the former was unhurt, with the exception of the last carriage, which had broken from its couplings, the other was thrown into the utmost confusion. The whole force of the shock, in so far as the former train was concerned, seemed to be conveyed to, and spent on, the last carriage, which the inventor proposes should be filled with goods or luggage.—Considerable discussion followed the reading of the paper and the experiment. The chief objections were—that the absence of all uniformity in the size and make of carriages would, even if the principle was sound, make the invention practically useless. Then, again, the force of the shock of a collision could only be conveyed throughout the length of the buffer and to the last carriage, when the train was on a straight line. If, for example, it was on a curve that the collision took place, the centre carriages, or the one where the bend was greatest, would receive the force of the shock, and the lives of the occupants of the carriage be sacrificed. Mr. M'CONNELL was the principal supporter of this objection. It was, moreover, argued by Mr. RAMSBOTTOM and others, that the application of the invention would be a practical disadvantage, except in one case—namely: as a strengthener of the bottom of the carriage. By the present side buffers, the force of a shock was distributed over the whole train—the first feeling the greatest amount of force—and thence it sensibly diminished, until the passengers in the centre, or the extremity of the train, scarcely felt it at all. Now, making the shock simultaneous throughout the whole train, as it was proposed to do, would have the same effect on the passengers as if the train had run against a dead wall. They would be thrown into each other's faces in every carriage in the train. Besides, if the train was run into, the engine and tender, and the men upon that, would be sacrificed.—Mr. CHESSHIRE replied, that, with respect to the indisposition of railway companies to go to the trouble and expense of applying the invention, he thought that the lives of the public was the first great consideration; and no expense and no trouble should be allowed to operate against any invention that promised to reduce the number of casualties. As for the principle of the invention, he was convinced that it was perfectly sound. Accidents seldom took place in curves; there the enginemen were always on the look-out. The force of a collision must be spent somewhere; and he could not understand how it could be an objection to his invention, that he carried it off from the carriages where damage to life would be done, and concentrated it where nothing of the sort was to be apprehended. He was convinced that, if the institution would recommend some of the railway companies to adopt the invention, it would be found to act most beneficially.—After some further remarks by Mr. Wright, Mr. Peacock, Mr. Crampton, Mr. Cowper, Mr. Fothergill, and others, Mr. M'CONNELL recommended that the consideration of the subject should be handed over to the council, who would discuss the merits of the invention with Mr. Chesshire.

BANKS'S PATENT STEEL TYRES.

Mr. FOTHERGILL read the following paper:—"The statement of facts relative to Thomas Banks's patent plan of steeling the tyres of railway wheels, is the result of nearly five years' trial, and shows the cost and durability of Staffordshire tyres, steeled on his plan, as compared with Low Moor tyres. The present cost of Low Moor tyres, for 3-ft. wheels, will be—

Four tyres of 3 cwts. each—12 cwts., at 2?s.	£13	4	0
Putting on the tyres ready for work	8	0	0
Twice turning up, after wearing hollow	1	0	0
Total cost	£22	4	0

Suppose these tyres to run 50,000 miles on an average—that is 50,000 miles at a cost of 22*l.* 4s.—the present cost of Staffordshire tyres will be—

Four tyres of 3 cwts. each—12 cwts., at 12s.	£7	4	0
Putting on the tyres ready for work	8	0	0
Steel for steeling one set—1¼ cwt., at 42s.	3	3	0
Man's wages, for turning grooves in the wheels	0	10	0
Smith's wages, for inserting the steel	0	10	0
Man's wages, for turning up after steeling	0	10	0
Men's wages, for drilling and rivetting	0	7	6
Total cost	£20	4	6

These tyres are proved to run before steeling 18,000 miles, and after steeling 100,000 miles—making a total work of 118,000 miles, at a cost of 20*l.* 4s. 6d. Now, subtracting 50,000 miles—the work of Low Moor tyres—from 118,000—the work of Staffordshire tyres steeled—we have 68,000 miles, which the latter will run more than the former, and at a cost of 39s. 6d. per set less. From the above statement, we see the cost of Low Moor tyres, per 1000 miles, is 8s. 10½d.; whilst the cost of Staffordshire tyres, steeled, is only 3s. 5¼d. per 1000 miles. The truth of this statement is proved by a test of nearly five years' trial, on those lines on which the plan has been most used. We are aware that railways do not all wear out the tyres alike; but on those lines where the iron tyres will run more than stated above, the steeled tyres will run more in proportion, and the plan is attended with no danger whatever.

NOTE.—The above statement shows only the advantage of steeling the tyres once, but we have steeled many a second time, after they have run the above distance. The same tyres may be steeled a second time at a cost of 5*l.* per set, when they will run 100,000 miles more—making a total of 218,000, at a cost of 25*l.* 4s. 6d., or 2s. 4d. per 1000 miles. The advantage of steeling a second time is secured by taking the tyres in time, while they have the requisite strength for steeling the first time. The general objection against the plan is, that there will be a deal of trouble to carry it out; but this objection, if properly examined, will be found to be without foundation. When the wheels want turning up, they must be taken from under the carriage, or waggon; and, when taken from under, the cutting of the grooves in the tyres for the steel will not cost more than 5s. per pair in men's wages; and, when the grooves are turned, one smith and three strikes will insert steel segments with 10 pairs of 3-ft. wheels in one day of 10 hours; after which, turning up the steeled wheels will take very little more time than turning up without steeling, which proves that the trouble will not be so great as some people imagine, and nothing, when the durability and saving which is effected is considered, by the tyres being steeled on this plan. The paper was accompanied by a letter from Mr. Jenkins, of the Manchester and Leeds Railway, highly commendatory of the steel tyres:—

"DEAR SIR,—I beg to inform you, that since the statement was sent you, showing the working of the locomotive engines which have Mr. Banks's patent steel segments inserted in their wheel tyres, the engine *Oldham* (as per statement) had run 58,866 miles when her crank axle broke. The wheels were then taken off, and not used until they were put under the engine *Queen*, November 12, 1846. Since then, to December 31, 1847, they have run 29,482 miles—making a total of 88,348 miles; and, if no accident happen to them, I conclude they will run from 40,000 to 50,000 miles more. The reason we have not more locomotive engines running with the steel segments, is that they have been neglected, owing to our being so busy preparing to make and making new engines and tenders, which has engrossed the whole of our time. But now, as we are better provided with locomotive power, we are turning our attention to steel segments in our wheels. We have a considerable number of 3 ft. and 3 ft. 6 in. wheels, with Banks's patent steel segments, running on this line; the number of miles has not been attended to, but is very considerable. My opinion is, that if the segments are properly put into tyres sufficiently thick, it will be a great saving of expense in tyres. "WILLIAM JENKINS.

"*Manchester and Leeds Railway, Jan. 28, 1848.*"

Mr. PEACOCK remarked, that he had tried the wheels steeled by Mr. Banks's process, and the result was, that whereas he was formerly obliged to repair the wheels of the tenders every four months, those with steel tyres did not require repair oftener than once in 12 months. He had not fully tested their wearing qualities, but he had no doubt that they would be found to be most economical as well as useful.—Several other of the members spoke in high terms of the value of this patent.

This was the last paper brought forward; and it having been suggested, that in future the meetings should take place an hour earlier, it was agreed to, and a vote of thanks passed to the chairman, when the meeting separated.—In the course of the evening, it was announced by Mr. Fothergill, that fifty-eight new members had been elected.

[We are indebted to the *Birmingham Journal* for the foregoing report, excepting the paper and discussion on Mr. Craddock's Boiler and Condenser, which we received from a correspondent.]

STRENGTH OF MATERIALS FOR RAILWAY WORKS.

In the *Mining Journal*, of the 25th March, we inserted the first part of a paper read at the Royal Scottish Society of Arts, by G. Buchanan, Esq., F.R.S.E., entitled, "An Exposition on the Strength of Materials, as applicable to the construction of Cast or Wrought-Iron Bridges (Part II.), including an account of the Tubular Bridges over the Conway and Menai Straits," &c.; we have now the pleasure of giving the second part, for which we are indebted to our contemporary, the *Scottish Railway Gazette*.

In the first part of the paper, Mr. Buchanan described the principle and construction of the high level bridge at Newcastle, which is intended to complete the communication by railway between London and Berwick-upon-Tweed. Some inquiry having been then made from the chair regarding the bridge over the Tweed, the only link remaining uncompleted between London and Edinburgh, he had received the following particulars from Mr. Harrison, the resident engineer under Mr. Stevenson:—The bridge is to be of stone, and is to consist of 28 semicircular arches, each 61½ ft. span, resting on lofty piers, carrying the level of the railway 103 ft. above high-water mark, 126 ft. above low-water mark, and 137 ft. above the deepest part of the bed of the river. The whole length of the bridge, with abutments and wingwalls, is 2140 ft. The 28 arches are divided into two series by a broad pier, 28 ft. in thickness in the middle. The piers of the arches are 8½ ft. in thickness at the springing, increasing by steps towards the bottom. The bridge will not be completed for 16 or 18 months, but it is intended to have a temporary bridge ready for traffic in the month of July next. This viaduct is a work of great magnitude, and will form, when finished, a striking and imposing structure, and one of the many to which the extension of railways has given rise. While on this subject, he would mention two other remarkable works, recently designed and executed by Mr. Miller, on the North British and Ayrshire Railways. The one is the viaduct over the valley of Dunglass, between Dunbar and Berwick, not far from the once celebrated Pease Bridge. This viaduct crosses the valley and banks by six semicircular arches, each 60 ft. span, and then the deep ravine by a single arch, 135 ft. span, and rising 150 ft. above the bed of the stream. A large and beautiful model of this structure was exhibited, which Mr. Miller, at the president's request, had allowed to be shown to the society. The other viaduct is that of Ballochmyle, across the Water of Ayr, on the Cumnock extension of the Ayrshire Railway, and is similar to that of Dunglass in crossing the valley on three semicircular arches, each 50 ft. span on each side, but is still more remarkable in crossing the deep ravine in the middle by a single semicircular stone arch no less than 180 ft. span, and rising 150 ft. above the bed of the stream—a bold and noble design, and which has been executed with complete success, the adjacent rocks furnishing such vast blocks of stone as greatly to facilitate the construction, and to render, indeed, the plan itself practicable. The arch stones are 5 ft. 3 in. deep at the springing, and 4 ft. 9 in. at the crown, and the appearance from below of the stupendous arch rising to such a height is singularly grand and striking. The whole arrangements connected with the quarrying and raising and depositing the stones on the building, by the improved machinery of modern times, has been most efficiently conducted by the contractors, Messrs. Ross and Mitchell; and the simple mode of centering adopted and shown in the Dunglass model is recommended by the advantage of preserving the timbers entire.

The subject of stone bridges opens a wide and interesting field, but extending beyond the limits of this paper. He would, therefore, resume the one more immediately prescribed—namely, the strength of materials, particularly iron for bridges. Some interesting experiments, which the time of the previous evening did not permit to be shown, were then made on the tensile strength of stone from Hailes and Craigleith quarries. The Hailes stone bore on the square inch 360 lbs., the Craigleith considerably more; and a remarkable effect was observed here after the load had hung a little: it was suggested by a member to give it a slight tap with a hammer; and on this being done, it immediately snapped asunder, showing the effect of vibration or concussion when the materials are greatly strained in aiding and completing the fracture—a circumstance which appears to throw light on what may sometimes occur by the rapid and violent actions of the trains on railways. The compressive strength of the Hailes and Craigleith stones was then shown, by experiment, to be much greater than the tensile strength; and, as it required, indeed, more weight and a more powerful apparatus than could be commanded, these experiments on different stones were deferred to another evening.

The compressive strength on posts and pillars was then considered, and the remarkable effects of the length of the pillar in diminishing its strength. On this subject much light has been thrown by the experiments of Messrs. Hodgkinson and Fairbairn. Pillars or rods were tried at different lengths, from 3 in. to 5 ft.; and of different diameters; rods ½ in. diameter, with 3¾ in. length, bore 11 tons; but, when the length was 7½ in. it only carried 5 tons; when 15 in. long, 3 tons; and, at 30 in., only 13 cwts. From these experiments, a general rule may be drawn for different lengths. Taking the strength of cast-iron as formerly given at 50 tons per square inch, this will hold good in pillars till the length reaches five times the diameter, and then it begins to diminish. When the length is 10 times the diameter, the strength is reduced in the proportion of 1¼ to 1; with the length at 15 times the diameter, it is reduced as 2 to 1; 20 times as 3 to 1; 30 times as 4 to 1; and 40 times as 6 to 1.

Hence the great advantage in cast-iron of using hollow pillars or tubes in place of solid metal, whereby, with the same area or section of fracture, the diameter of the pillar is increased, and with it the resistance to flexure, and an increase of strength in proportion to the length. A solid pillar, for instance, 6 in. in diameter, if extended to 7½ ft. in length, would be weakened one-half, but if cast hollow, 10 in. in diameter, and ¾ in. thick, giving the same weight of metal per ft. in length, it might then be extended to 12½ ft., and still possess the same strength as the other. In all these cases a remarkable circumstance was observed in regard to the mode of applying the strain. With the ends of the pillars turned flat, and a flat plate interposed at top and bottom, which is the case in supporting buildings, this was found to sustain nearly three times as much as when the pillar was rounded on the ends, so as to make the force pass directly through the axis, as occurs so frequently in machinery with the connecting-rods of steam-engines, and in other cases. The effect of the length of pillars in weakening the strength was illustrated by a striking experiment with a spiral wire, quite flexible, yet, when set up as a pillar, and tied in the middle latterly, with slender threads, carried a weight of 56 lbs., and would have carried much more, but the moment the threads were cut, the wire gave way by flexure, and oversetting the balance, the weight immediately sunk.

In regard to the transverse strain, he had already explained the nature of this compound action, and particularly the manner in which, under it, the beam becomes exposed at once to the effects of tension and compression, the one side being distended and the other compressed. On this most interesting and important subject he had still much to say, but would defer it to another evening, as the time was short, and he was anxious to proceed with another part of the paper which had been particularly referred to—viz.: the subject of the tubular bridges.

The application of malleable iron had already been used in the shape of tension-rods in cast-iron girders, and was applied, as we have seen, in the high level bridge at Newcastle; but the application of girders constructed of malleable iron alone is a new idea. It has been applied on railways in the case of skew bridges of wide opening and limited depth between the railway and the road; in these cases the girder consists of a rectangular hollow tube or square box, extending over the whole span, and of such depth as can be attained. These have hence received the name of tubular bridges, and have excited much attention since the grand experiment has been determined on, of trying these structures on such a magnificent scale as is now in progress of execution in the crossing of the Straits of Menai by the Britannia Bridge, and the estuary of the Conway by the Conway Bridge, and which form is, without doubt, the most remarkable engineering enterprises of the present day. These spots, as is well-known, had already been the scenes of vast engineering operations connected with the suspension bridges of Telford, to form the great turnpike road communication from the metropolis to Holyhead, and thence across the Channel to Dublin: and, when it was determined that this communication should be superseded by railway, it became a matter of most serious consideration how these two openings were to be spanned, keeping in view the new conditions of stability required for railway traffic; and the subject having been remitted to Mr. Stephenson, the engineer of the line of railway—namely, the Chester and Holyhead—he at once rejected the principle of the suspension bridge as inapplicable, owing to the undulations to which it was liable, and which had been proved by practice in a similar bridge for a railway across the Tees to be both inconvenient and dangerous. How far the principle might have been modified by the introduction of proper ties and braces, may be a question; but in a case of such vast magnitude and importance there might still have been risk, and, on the maturest consideration, Mr. Stephenson determined to recommend the simple and bold design of a hollow rectangular tube of malleable iron, consisting of thin plates rivetted together, such as he had already tried with success on a smaller scale upon railway bridges, and which he conceived was the best form for securing not only strength, but sufficient stability and stiffness to prevent any undue oscillations or vibrations. To carry out this plan, the assistance of the first authorities, scientific and practical, on the strength of materials, was called in; and to Messrs. Hodgkinson and Fairbairn the duty was remitted of trying the effect with experimental tubes on a small scale, and finally on a model one-sixth of the dimensions of the bridge, being 75 ft. long. Much valuable information was obtained during the progress of these experiments. The first thing observed was the uniform tension of the under side of the tube when loaded, and the violent compression of the upper side, forming a beautiful illustration of the nature of the tensile and compressive forces laid down. The former, by its uniform tendency to produce the stable equilibrium, bringing the thin masses into a straight line, the line and position of repose; but the latter, on the contrary, tending to produce flexure in the plates, to push them out of the straight line, and push everything out of joint; so that when the bottom plates remained firm, and retained their form, the top plates became bagged up and puckered like a loose web of cloth. The top plates were, therefore, strengthened, and the addition of another plate to the top increased the breaking weight from 3700 lbs. to 4500 lbs.

As it was not so much strength that was wanted on the top plate as stiffness, in place of adding layer upon layer of plates, the idea naturally occurred of forming the top-plate into a series of little hollow square tubes running longitudinally the whole length of the bridge, having the appearance, looking end ways, of little cells, the effect of which was such, that while the top plates remained firm, the bottom ones now appeared to give way. These being next strengthened, an extraordinary effect was then exhibited when the tube broke, the sides collapsing together, and twisting and distorting the whole fabric in a singular manner, showing that the sides formed now the weak point. These, then, were strengthened and stiffened by numerous ribs of angle iron running vertically from top to bottom, and at last, by these repeated trials, the strength and proportions of the different parts of the structure appeared to have attained a fair and proper distribution. The strength of the tube, which at first only carried 7 times its own weight, was then increased to 11 times, and from these experiments the strength and proportions of the real design have been calculated; and one of these tubes, as is known, has now been actually constructed on the shore of the Conway, floated by water to its place, and raised to its proper height by the power of two enormous hydraulic rams, one at each end, lifting the gigantic mass, which is 412 ft. in length, 15 ft. wide, 25½ ft. high, and weighing no less than 1300 tons. This is intended for one set of rails, and there is another tube of the same dimensions in preparation to be set parallel to it for the other.

The situation of the structure close to the suspension bridge, and close to the base of the magnificent Castle of Conway, and the effect of spanning the wide estuary of the Conway, were all illustrated by a beautiful drawing, and the nature and construction of the tube or bridge itself was illustrated by a model which he had himself constructed. The model was composed of only three thicknesses of paper and one of cloth, and the sides were strengthened by thin slips of wood to represent the angle iron; it was 8 ft. 6 in. long, 6½ in. deep, and 3½ in. broad, and, although weighing only 4 lbs., it carried a weight of 32 lbs. in the centre without visible deflection.

The dimensions and structure of the bridge he would now describe, from information for which he was indebted to Mr. Fairbairn, of Manchester, and through Mr. Stephenson to Mr. E. Clark, the resident engineer under him. The sides of the tube, which are 25½ ft. deep at the centre, consist of malleable iron plates, only ½ in. in thickness, rivetted together in plates 2 ft. broad, and from 4 to 8 ft. long (as was shown in an enlarged view or elevation with cross sections), adjusted so as that the joints may break band. At the joints, however, the strength and stiffness of these plates is greatly increased by slips of T iron, one of which is laid on the outside of the plate, and the other opposite to it on the inside, face to face, and all the four surfaces strongly rivetted together. The top of the tube, again, consists of two separate horizontal plates, running parallel to one another, 1 ft. 9 in. apart, forming together as it were a ceiling to the tube or tunnel and an external flooring on the top. These plates are ¾ of an in. thick, rivetted together in breadths of 2 ft. 9 in., and in lengths of 6 ft.; and between them there runs seven vertical plates longitudinally, from end to end of the bridge, 1 ft. 9 in. high, and ¾ of an in. thick, separating the ceiling from the floor or upper platform, and at the same time uniting them strongly together by rivets and joints—each vertical plate having a rib of angle iron on each angle running longitudinally the whole length, by which it is united into one vast cellular mass, consisting of eight separate cells or tubes, 1 ft. 9 in. square. The object of all this strength and distribution of materials is to give the necessary stiffness and strength where the compressive force acts. And on this account the top and bottom plates are merely united by butt joints with covering plates. The whole sectional area of this cellular frame consists of 608 square inches. Lastly, the bottom of the tube consists of a similar frame of cells, but only six in number. The upper plate consists of two layers of plates, each ½ in. thick, and the under one the same; but, as these plates are intended to resist tension, and ought to be formed, if it were possible, like a chain, besides being laid in two layers, the plates are arranged so as to break joint, and a covering plate 3 ft. long and as thick as the plate, is placed over every joint, with sufficient rivets, such that the tearing strain is equal to the tensile strength of the plates they connect. The plates are 12 ft. long, and 2 ft. 4 in. broad, being the whole breadth of the cell. The angle iron in the bottom cells and plates is rendered continuous by covers. The top and bottom are united to the cells by strips of angle iron running the whole length, inside and out; the interior verticle angle irons at top and bottom are curved round to increase the strength of attachment, and there are also gusset or angle pieces rivetted on for additional strength. The rivets used vary from 1 in. to 1¼ in. diameter, and there are about 250,000 in each tube. The holes were made so as to make the rivets fit well, and they were all put in red hot. The sectional area of the bottom frame of cells is 508 square inches.

These are the dimensions in the centre of the tube, but the top plates become thinner towards the end, where they are only ½ in. thick, and also the bottom plates, where they are reduced to ½ of an in. each. The side plates again get thicker towards the ends, where they are 10-16ths thick. The ends of the tube are stiffened with cast-iron frames, and there are also castings in the cells for 8 feet at the ends, and the sides are also greatly strengthened at the ends. The tube was originally curved on the top 7 in., and was brought to the straight line by the elasticity of the material as calculated on; showing that with its own weight, 1300 tons, it only sunk 7 in. The one end of the tube is to be fast in the stone pier or abutment, the other is to be loose to allow of expansion, which has been found quite visible in different states of the atmosphere. Mr. Clark states that the line is a sensible thermometer—half an hour's sunshine at one end, or on the top, will move it latterly 1½ in., and vertically 2 in., and this when the tube is loaded with 200 tons in the centre. Such are the dimensions and structure of this extraordinary work, and in regard to which, he was happy to say, the trials which have been already made appear to promise every success. A load of 100 tons only sunk the tube 1 in. in the centre. In regard to the calculation of strength he was not able to enter on these at present for want of some of the data, but expected to do so on another evening.

The thanks of the society were voted to Mr. Buchanan for his excellent and instructive exposition, and thanks were also voted to Mr. Stephenson, Mr. Fairbairn, Mr. Clark, and Harrison, civil engineers, for communicating the information relative to the tubular bridge at Conway and Menai, and viaduct at Berwick; and to Mr. Miller, C.E., for allowing his elegant model of the viaduct at Dunglass to be exhibited.

CALEDONIAN RAILWAY.—The express train, which left the Euston station at nine o'clock, on Monday morning last, arrived at the Lothian-road station of the Caledonian Railway, Edinburgh, precisely at 28 minutes past nine in the evening—thus performing the first through passenger train transit within 12½ hours. The corresponding train, from Edinburgh to London (which also performs the journey in 12½ hours), started from the Lothian road station at a quarter past 10 in the morning, and arrived at Carlisle in three hours; and the passengers, after partaking of some refreshments there, proceeded to Manchester, Liverpool, Birmingham, and London, without any change of carriage.

CORNWALL RAILWAY.—The immense cylinder, which is to be employed in examining the bed of the river off Saltash, preparatory to the erection of the bridge across the Tamar, for the purposes of the Cornwall Railway, was launched from the wharf on Wednesday, the 26th April, and floated off to the hulks moored in the centre of the river for depositing it in its position. The work was skilfully performed under the superintendence of Mr. Glennie and Captain Dance. Not the slightest accident occurred during the progress of the work, which occupied the comparatively short space of six hours. We understand that the purchase blocks which were made for the occasion were manufactured upon Mr. Bothway's new principle of internal iron binding; and although they were not more than 24 inches, they were considered to be equal to the Government blocks of 30 or 36 inches.

LANCASHIRE AND YORKSHIRE RAILWAY.—The Heywood and Bury branch of this line, completing the communication by that company's lines, between Manchester and Bury, was opened on Monday last. The trains commenced running at eight o'clock in the morning, and continued to do so during the day. The distance between Manchester and Bury by this line is 13 miles. It is intended to run from Manchester to Bury in half an hour, which is the time occupied in going between the two places by the East Lancashire line; one of the trains, however, on Monday, ran between Manchester and Bury, by the new line, in 20 minutes. There will be seven trains a day each way, except on Sundays, when there will only be four. The only station between Heywood and Bury will be at Heap-bridge. The works on the newly-completed branch are rather heavy, as the country through which it runs is of a boldly undulating character. There are several embankments, cuttings, and bridges, all of which have been constructed entirely to the satisfaction of the Government Inspector. There are no tunnels. At present there is only a temporary erection as a station at Bury, but a large and commodious one is intended to be erected on the site of the present temporary building, which, from its contiguity to the market, on the south side of the town, is exceedingly convenient. By means of the newly-opened line, not only is there a new direct communication between Manchester and Bury, but the advantages of railway communication are given to the numerous manufactories, and the large manufacturing villages of Heap-bridge and Pymbole, lying between Heywood and Bury. Bury is now, by this branch, connected with all the great markets of the West Riding of Yorkshire, and with Rochdale; and Rochdale, again, is connected with the important manufacturing district upon the East Lancashire line. The new line forms the link of communication between Manchester and the Liverpool and Bury line, the works on which are under contract to be completed in July.

NORTH-WESTERN RAILWAY.—In consequence of the opening of the Chester and Holyhead Railway to Bangor, an entire alteration has taken place in the time-table on this railway; additional express trains were started, in conjunction with the Caledonian Railway, the entire distance between London, Edinburgh, and Glasgow, being yesterday performed, without change of carriage, in less than 12½ hours.

OXFORD, WORCESTER, AND WOLVERHAMPTON RAILWAY.—On Saturday morning last, considerable excitement prevailed in Dudley, in consequence of a report that the bridge lately erected by the above company over the Dudley and Birmingham turnpike-road, near the Castle, had a second time given way, which report, unfortunately, proved to be true. It appears that the workmen had begun to build the side wings to the bridge, and had sunk about 18 feet below the foundation of it, and by so doing the foundation was exposed to the atmosphere, which so acted upon the stone which supported it, that it caused it to slack, and become otherwise impoverished. Before the work could be finished, the bridge began to show signs of weakness, by a few bricks falling at a time; and, after several more parts had fallen, a large portion of one end of the bridge, together with a considerable segment of the arch itself, came down with a tremendous crash. Fortunately, no accident happened to the workmen. We understand the damage, although very serious, can be safely repaired, the bricklayers being now employed in putting in short lengths of brickwork for that purpose, at the parts of the foundation which gave way.—*Worcester Journal.*

SOUTH DEVON RAILWAY.—The new portion of the line just completed between Totness and Laira, was inspected on Saturday, the 29th ult., by the Government engineer, Captain Symons, Royal Engineers, who, accompanied by Mr. Carr, secretary; Mr. Clarke, superintendent; Mr. Glennie, engineer, and other officers of the South Devon Railway, left Totness in the morning, and proceeded, a little after 9 o'clock, down the line. The tunnels and viaducts were passed and re-passed, and the latter were examined most carefully. The distance exceeds 20 miles, and the down inspection occupied between three and four hours. A gentleman who was on the train at the time, states that the condition of the line appeared to give the most entire satisfaction. The Ivybridge, and other viaducts, about which so many doubts have been expressed, prove on trial to be perfectly safe, and were passed over without the least vibration. A train, weighing 90 tons, went over the line on the 28th ult. Contingent on the approval of Capt. Symons, the South Devon Railway was to have been opened yesterday from Exeter to Laira, when six trains up, and six down, will be put on. The earliest from Laira will start at 7.30 A.M., and the latest at 6.25 P.M. The first arrival at Laira will be 6.30 A.M., and the last 12.20 P.M.

STOCKPORT VIADUCT.—This splendid structure, on the London and North-Western Railway, is 1783 ft. in length, and is carried on 26 arches, 22 of which have a span of 63 ft. Its length, however, is not its most remarkable feature, but the great height at which the traveller is securely and rapidly carried across the valley below. The height of the parapet above the river is 111 ft., and the rails are about 120 ft. above the foundations of the arches. From the top is obtained one of the most favourable views in England of a manufacturing town. The foundation stone of this gigantic undertaking was laid on the 10th of March, 1839, and the whole was completed 21st December, 1840, although it was not until the 16th July, 1841, that the first engine and train passed over it. In height, it exceeds the Menai Bridge by 4 ft. The quantity of stone used in its erection was above 400,000 cubic feet, and the bricks exceeded 11,000,000. For the information of the curious, it may be stated that such an amount of bricks, if laid endways, would describe a distance of 1562½ miles—so arranged they would reach from London to Ispahan, in Persia; from London to Cairo, in Egypt, or from the English metropolis to beyond Morocco, in Africa; and they would exceed the whole length of the immense Mongolia wall which bounds the Chinese dominions on the north, and would considerably more than reach across the Celestial empire; they would be about five times the length of Ireland, or 10 times the length of the largest county in England, which is Yorkshire. The cost of its erection was upwards of 70,000*l.*

SUNDERLAND COAL TRADE.—License was granted by King Henry III., in 1239, "to the good men of Newcastle, to dig coals and stones in the common soil of the town and outside the walls." In 1384, permission was given to export the produce of the mines. During the civil wars, in 1644, the export from Sunderland was greatly increased, as no coals were permitted to be brought from Newcastle to London, on account of that town being a stronghold of the royalist party. Between 1704 and 1711, the average annual export had reached 174,264 tons, and that of the year 1846 was 1,500,000 tons. The census in 1802 gave 19,100 inhabitants, whilst the town, in 1847, contains upwards of 60,000 persons.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY ....West Flanders Railway—London Tavern, at One.
MONDAY .....West Wheal Jewel Mining Company—offices, at Twelve for One.
WEDNESDAY...Universal Life Assurance Company—offices.
Legal and Commercial Life Assurance Company—offices, at Twelve.
Imperial Continental Gas Association—offices, at Two.
Amicable Life Assurance Society—offices, at One.
Metropolitan Life Assurance Company—offices, at Two.
THURSDAY....Ionian Banking Company—offices, at One.
Law Fire Insurance Company—offices, at One.
Birmingham and Oxford Railway—King's Arms, Westminster, at Two.
FRIDAY.....Imperial Brasilian Mining Association—London Tavern, at Two.
SATURDAY ....General Fire and Life Assurance Company—offices, at Twelve.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

METROPOLITAN SEWAGE MANURE COMPANY.

The half-yearly meeting of the shareholders of this company took place on Tuesday last. After some introductory business, the report was read by the secretary. It stated that—"Although the directors considered it their duty, by reason of the late crisis in the commercial world, to retard rather than hasten the progress of the work generally, yet they deemed it essential to the lasting prosperity of the undertaking, that no time should be lost in bringing a portion of their scheme into remunerative operation. To this end they mainly directed their efforts, during the last six months, to irrigating the market gardens and fields in the neighbourhood of Fulham. With this object they had caused the surrounding lands in that district to be surveyed. They have completed the purchase of the land for the station, and had also bought two steam-engines, and contracted for a sufficient quantity of iron pipes, on terms advantageous to the company. Considering the commercial difficulties of the times, the calls had been pretty well paid up; but, upon the shareholders in arrear, the directors respectfully urge the necessity of payment, that they might be enabled to meet their obligations, without unduly pressing upon those who have been more prompt. The directors were desirous of explicitly submitting to the shareholders the present position of the company in relation to the commissioners of sewers, about which many erroneous reports had been circulated. The Acts of Incorporation having given to the company power to take the sewage, the directors immediately made the required application to the commissioners, and obtained their approval. Those works contemplated a tunnel as a part of the plan, but the new commissioners of sewers having referred the plans of the company to their surveyors, who, in their report, had taken different views of the best means by which the sewage could be conveyed to the company's station, the directors, in their communications with the commissioners of sewers, acted in the spirit of conciliation, and expressed their anxious desire to accede to any reasonable suggestions, and co-operate in any plan they might prefer. They, therefore, expected that an arrangement would be effected between them which might facilitate the objects of the company, and promote those of the commissioners."

The financial statement, as read by the secretary, showed that the receipts of the company had amounted to 14,853*l.* 10s., and the disbursements to 10,831*l.* 1s. 11d., and that the assets of the company were 21,665*l.* 10s. 9d., while the liabilities were 12,435*l.* 8s. 1d.

Several speeches, in commendation of the energy and perseverance of the directors, especially with reference to the advantageous commencement of the works at Hanley-bridge, were delivered, and the meeting dispersed, evidently gratified at the favourable position of the company.

BRISTOL AND EXETER RAILWAY.

A special general meeting of proprietors was held at the White Lion Hotel, Bristol, on Wednesday last—J. W. BULLER, Esq., in the chair.—The meeting was convened for taking into consideration the drafts of the following bills now before Parliament:—1. A bill for enabling the Bristol and Exeter Railway Company to purchase the Glastonbury Navigation and Canal, and for amending the Acts relating to such railway and canal.—2. A bill to enable the Plymouth Great Western Dock Company to raise further capital, and to authorise the Great Western, the Bristol and Exeter, and the South Devon Railway Companies to subscribe to the Plymouth Great Western Docks, and for other purposes.—3. A bill to enable the Great Western, the Bristol and Exeter, and the South Devon Railway Companies respectively, to increase their subscriptions towards the undertaking of the Cornwall Railway Company.—The CHAIRMAN said, respecting the third bill, it was intended by it to carry out an arrangement between the Great Western, the Bristol and Exeter, and the South Devon Companies with the proprietory of the Cornwall Railway, by which it was agreed that under certain conditions the companies should take a certain portion of additional stock in the Cornwall Company; but circumstances had since occurred to prevent the attainment of the conditions, and the bill had consequently been withdrawn with the full consent of the shareholders of the Cornwall line, who were most interested in passing it. The other two bills had been approved of at previous meetings of the shareholders.—In reply to questions by Mr. Bowsher and other shareholders, it was explained by the CHAIRMAN and SECRETARY that the purchase-money agreed to be given for the Glastonbury Canal was 7000*l.*, which, in consideration of the canal company assisting to carry the bill through Parliament, was to be paid upon its passing. The present traffic of the canal was 300*l.* a year, but it was considered capable of improvement. The purchase of the canal was considered advisable, as a defensive measure against the jealousies of other rival companies. In addition to the purchase-money there would be other liabilities, but not to any large amount.—Mr. BOWSHER then objected to the resolution submitted by the chairman in approval of the bill, and begged to enter his protest against their extending the liabilities of the company by engaging in other speculations. In such times as the present every tub should stand upon its own bottom, and their railway should not be called upon to support other unprofitable concerns. He considered that they had already gone beyond the bounds of prudence by investing so large a sum in the South Devon Railway, from which he did not anticipate anything like an adequate return.—Mr. TARTT, and some other shareholders, expressed similar views to those entertained by Mr. Bowsher, and objected to the directors calling upon them to increase their capital for the establishment of branch lines and the support of collateral sources of traffic. As to the proposed purchase of the Glastonbury Canal, Mr. Tartt said he did not consider it could be justified by any necessity or any prospect of a profitable return. The subscription towards the Plymouth Great Western Dock was in principle still more unjustifiable, as the merchants of that port ought to provide accommodation for their shipping, and not require it at the hands of a railway company which had done much by bringing within their reach the facilities afforded for commercial pursuits by railway accommodation.—Two or three proprietors strongly urged upon the directors the importance of studying in the present depressed state of money matters the strictest economy, as great difficulty was felt by proprietors in meeting the necessary calls.—The CHAIRMAN, in reply, said the directors were fully alive to the importance of economy and retrenchment, and agreed with all that had been said as to the desirability of their not recommending any addition to the capital outlay of the company. The present measures did not, however, recommend any new outlay of money. The Cornwall bill, which would have been the only one open to that remark, had been withdrawn, and the two which remained had been already assented to by the proprietors, upon whose requisition the directors had acted in endeavouring to carry them out.—Some further conversation followed, and the resolutions sanctioning the bills were carried by a large majority. Thanks were then voted to the chairman, and the meeting broke up.

SOUTH WALES RAILWAY.

A special general meeting was held at the Great Western station, Paddington, on Wednesday last—C. RUSSELL, Esq., M.P., in the chair—for the purpose of taking into consideration the drafts of the bills which have been applied for in the present session.—The CHAIRMAN stated, that the meeting had been called in compliance with the Standing Orders of the House of Lords, applicable in such cases. As regarded the bills brought under consideration, he observed that the directors had strictly adhered to the resolution which they had previously declared, not to introduce any new undertaking in the present state of commercial and railway affairs.—The bills submitted to the meeting for its approval were the following:—A bill for enabling the South Wales Railway Company to hold shares in the undertaking of the Vale of Neath Railway Company, and for other purposes. A bill to amend the Acts relating to the Waterford, Wexford, Wicklow, and Dublin Railways, and for other purposes.—After considerable discussion, the further progress of these bills was sanctioned by the proprietors, but not without some opposition.

[For remainder of Proceedings of Public Companies, see page 220.]

DUNN'S IMPROVEMENTS IN RAILWAY CARRIAGES.—[Patent dated Nov. 2, 1847. Patentee Thomas Dunn, of the Windsor-bridge Iron-Works, Manchester. Specification enrolled May 2, 1848].—The patentee first describes several improvements in the construction of railway wheels. One of the principal objects aimed at by him is the easy removal and replacement of the tire upon the wheel when it has become worn; this he effects in several ways, although they are all pretty much on the same principle. His first method consists in having the nave, arms, and an inner tire cast in one piece, upon which the outer tire is bolted by means of a flang, which projects inwards a few inches beyond the inner surface of the tyre. The joint between these two pieces, out of which the wheel is formed, is packed with gutta percha or some other elastic substance. A second method consists in having the nave of the wheel cast with mortices in it for the reception of wooden arms or spokes, and in afterwards fixing the tire to the nave, by bolts passing down through the middle of the spokes. According to a third method, that part of the wheel which is occupied by the arms is entirely filled in with segments of wood, between which segments there are driven wedges of either wood or iron, so that the wheel is almost entirely solid. The tire is attached to the nave by bolts. The patentee makes his axles of wood and iron, the wood forming an internal solid core, with an outer covering of iron. He also makes axles of several pieces, by having the naves truly bored out, and driving into them a short axle, or rather part of an axle, which is formed on the outside of the wheel, into the journal or bearing, and on the inside projects only a few inches, leaving sufficient strength of material to pass a cotter through to retain the axle in the nave. The two wheels forming the pair are then connected by rods of iron (the patentee prefers using three such rods), which have collars formed upon them near to their ends. The portions beyond the collars are passed through holes formed in the naves of the wheels, and have screws upon their outer ends—so that the wheels are, in a measure, devoid of axles, the connection between them being formed by the rods. The second portion of Mr. Dunn's improvements relates to the construction of jacks for moving carriages and locomotives on to the line of rails when they happen to have got off the same. The chief feature of this improvement consists in providing the jacks with four small friction rolls at the bottom of the pillar, by which the jack, with its load, is easily made to run upon a smooth surface in any direction. A third improvement consists of a means of removing carriages from one line of railway to another, which Mr. Dunn effects by means of a low truck, running upon a set of cross rails. A portion of the main line of rails is made to form an inclined plane at pleasure, by means of cams fixed under the rails, whereby he is enabled to run the carriages on to the low truck.—*Mechanics' Magazine.*

THAMES TUNNEL COMPANY.

The number of passengers who passed through the Tunnel in the week ending April 29, was 20,055; amount of money, £83 11s. 3d.

Mining Correspondence.

ENGLISH MINES.

BARRISTOWN.—Capt. T. Angove (April 29) reports—Since my last report, the men in the adit level, sinking the winze, have been obliged to abandon it, from an increase of water. The stope of ground from the adit end to Nangle's shaft is improved, producing over one ton of ore per fathom. The pitches in the back and bottom of this level are producing about ½ a ton per fm. The pitches in the old mine look much the same as last reported. We shall commence an adit shaft, east of Nangle's, on Monday next. We shall also commence to drive a cross-cut south from eastern flat-rod shaft in about 10 days, to uncoat the course of ore in the bottom of the adit level.

BEDFORD UNITED.—Capt. Thomas Ellery (May 3) reports—At Wheal Marquis, the sumpmen are still engaged cutting plat in the 90 fm. level east; in the stopes, in the back of this level, the lode is 2 ft. wide, and worth 40*l.* per fm.; and in the rise, in this level, the lode is 2 ft. wide, producing saving work; there is no alteration in the 90 fm. level west. The lode in the 80 fm. level east is somewhat improved, being 2 ft. wide, producing good saving work—ground more favourable for driving. In the 70 fm. level east, and the 47 fm. level east, we are still driving by the side of the lode. At Wheal Tavistock, the lode in the 47 fm. level, west of Phillips's shaft, is 2 ft. wide, producing some saving work, and very promising. Of the south engine-shaft, the lode in the 25 fm. level east is 5 ft. wide, producing ore throughout, and is altogether more promising than it has been since the commencement of the level. The adit level is much the same. We weighed at Morwelham, on Friday last, Feb. ores, 124 tons 6 cwts.; and sampled March ores, two parcels, computed 71 tons (21 cwts.), and 50 tons (21 cwts.)

COATLITHE HILLS.—Capt. J. M. Paull (April 29) reports—We have cut through the vein, and have commenced opening a little east and west on it. As far as we have seen, it varies from 3 to 4 ft. in width—has produced some excellent stones of lead ore, and has every appearance of answering well.

CWM ERFIN.—Capt. S. Nicholls (April 29) reports—The whim-shaft remains without any ore to speak of—the east end is just as last reported, with some spots of ore in the lode; the stope, west of whim-shaft, is worth 10 cwts. of ore to the fathom; the stope, east of whim-shaft, is worth 1 ton of ore to the fathom, similar to last report; also, the lode is making in length as we rise the stopes in height. The stope, west of east shaft, is worth 7 cwts. of ore to the fathom at present. I hope to put the crusher to work next week, in order to bring about some ore for the market as soon as I can.

DEAN PRIOR AND BUCKFASTLEIGH.—Capt. James Carpenter (April 29) reports—In accordance with your request, I have taken a minute survey of the mine this morning, and beg to inform you, that the various departments, as referred to under, have been carried out this past month, as intended, when set the last time I visited the mine. The cross-cut in the 30 fm. level has been driven south 2 fms. 2 ft., and intersected the lode; its underlay is hardly so much as in the upper levels, which, from its size also, I conceive to be a good indication; it averages 4 ft. in width, composed of copper ore, with a great proportion of mundic, peach, prian, &c., possessing the general characteristics of being strong and productive of much ore in depth—a very decided improvement, as compared with other parts of the mine—a few specimens I forward, taken out of the lode this morning; we have set six men to drive west 3 fms. on the course of the lode, at 95s. per fm.; and four men east 2 fms., at 90s.; this work, when completed, will enable us to judge better the best mode for its future prosecution. The lode in the 20 fm. level west is 8 ft. wide, very regular, but, on the whole, poor; as it is much larger in the present end than it has been for several fathoms driving, we thought it advisable to continue opening further on it, as it is getting in deeper ground, and indications are more encouraging; to prove the lode under the 20 fm. level, intermediate the diagonal shaft and west end, we have sunk a few feet in several places, and find the shoot of ore, now working on by tributers in the back of the level, to be continuous in depth, and lengthens also with a branch, or leader, of copper ore on the south part, varying from 4 to 6 in. in width, similar to the specimens presented, the other part of the lode being from 3 to 4 ft. wide, mixed with copper ore, mundic, &c. There is no material alteration in the pitches in the back of the 20 and 10 fm. levels since last reported on. There are about 18 tons of copper ore cleaned for market; I should think 6 tons more, nearly of the same quality, to dress—independent of 6 tons, which will be requisite to go under the process of stamping, to reduce it to a smaller size, for the better mode of extracting the ore from the admixtures. It is for you to determine whether the 18 tons already dressed shall be immediately sold, or wait till the other 6 tons are ready, and send it off at one time, as it will be less expensive, and show the general quality as a criterion to work by in future. The stamps' axle will be ready to attach to the small wheel that was used for the purpose of drawing in a very short time, when the other 6 tons referred to can be got ready also. I am not aware I can detail further information relative to the appearances of the present prospects of the mine, than there is here embodied in this summary report, but shall, with pleasure, give the clearest explanation in my power to any questions arising on that head.——Capt. Choake (May 3) reports—In the 24 fm. level west the lode is about 8 ft. wide, composed of capel, spar, and iron, but at present unproductive; in the pitch, in the back of this level, the lode still maintains its size and character. In the 80 fm. level east, no lode has been taken down since Saturday last—the men are driving the lode; in the end, driving west, in this level, the lode is about 4 ft. wide, producing some stones of ore. I am of opinion, that we have a branch, or limb, of the lode to the south; that we shall ascertain by cross-cutting some 2 or 3 ft.

DEVON AND COURTENAY.—Capt. H. Seccombe (May 2) reports—In driving the end, south on the cross-course, we have discovered a lode to the west of it, 1 ft. wide, composed of mundic, peach, and spots of ore. We have continued the end, south on the cross-course, as we think there must yet be another lode further south. In the end, driving north on the same cross-course, there has been no lode yet discovered. The lode in the end, driving east on the south lode, is increased in size, being now 2 ft. wide, composed of mundic, spar, and spots of ore. The shaftmen continue to sink in favourable ground, being now 8 fms. 4 ft. below the 40 fm. level.

EAST CROWNDALE.—Capt. S. Paull (April 29) reports—The ground in the 58 fm. level, driving south, continues just as when last reported upon—killas, with small branches containing copper ore. The end driving north is much harder, the ground being laced up with branches of spar and capel. The 47 fm. level, west on the course of the north lode, is poor, although the lode is increasing in size, is 20 in. wide, composed of capel, spar, killas, and spots of copper ore; the rise and stopes in the back of this level west look pretty much as usual; the lode in the eastern end of the back is 2 ft. wide, composed of peach, spar, mundic, and copper ore; we have raised in the past week from this place about 3 tons of ore; the winze sinking below this level east is to-day suspended, the ground being difficult and expensive to sink in; the lode in the bottom is just as when last reported upon. We have in the past week broken some good tinstuff from a plat branch in the eastern adit level at Rix Hill. The engine-shaft at Rix Hill is again set to sink this day, and I confidently expect to give you a good report of the lode in this place in my next report.

GARRIS.—Capts. R. Skewes and J. Grose (May 2) report—During the past month, the 50 fm. level has been driven about 5 fathoms, principally through the cross-course; and we have just discovered the lode on the south of this slide, which is about 20 in. wide, having a very kindly appearance, and producing some very good stones of lead. The 40 fm. level has been extended south between 5 and 6 fathoms, the greater part through a rich lode, worth at least 10*l.* per fm. Brentor's shaft has been sunk from the 30, and will be completed to the 40 fm. level by the end of this week, which will be of important service, both for ventilation and the convenience of drawing ores. The 30 fm. north is within a few fathoms of Smith's shaft, with which we hope to communicate in the course of the present month—this will bring us to within 8 or 9 fms. of the sinks in the bottom of the 20 fm. level which are not yet unwatered, and where there exists no doubt but large quantities of rich ores have been raised during the last working of this mine; the ores here are exceedingly rich for silver. The 10 fm. level is exceedingly promising in its appearance, and produces good saving work; this level is nearly approaching that beautiful fall, or valley, where, in all probability, there is a large deposit of ores. In addition to our tribute departments, we set two pitches yesterday; and, on the whole, we may conclude by saying, that our prospects are exceedingly favourable, and that our sampling for the present month will much exceed the past.

GOLDSCOPE MINE.—Captain William Jeffery (Keswick Mine, April 26) reports—Agreeable with your request, I have carefully inspected these mines; and, from all that I can see, I am satisfied that, if you will erect a water-wheel in the lower level to draw out the water from the bottom, you will find a good mine; the same wheel would draw all the ore to the railway, and the mine would be worked at a light expense, having sufficient water-power. I find the levels cleared out, cut open, and rails fixed in readiness, for working the mine to bottom. It is evident the former workers have raised large quantities of copper ore (about 300 years since), without the aid of gunpowder, besides the very great labour of drawing the water with hand pumps, and also the ore by hand labour, it is supposed to the depth of 25 fms.; the vein, or lode, is from 9 to 12 ft. wide, and, so far as I can see, regularly worked for many fms. long; it is evident the former workers never drove a level west on this large vein, which is in whole ground all through the sett. I would, by all means, recommend you to drive the lower level—that is, the present level west on the vein, as you will be likely to make fresh discoveries of copper, that may produce thousands of tons—the cover, or back, of level being 40 fathoms in untried ground; this driving I call a very good speculation, but the bottom of the mine I consider to be no speculation, there being no doubt on my mind but you will find a good course of ore in the bottom to work on, when you have got out the water, and cleared the mine. If you have any shares to dispose of, I will join you to the utmost of my power, only let me know the terms. I find mills for stamping, crushing, and clearing the ore in first-rate condition, being all quite new; also railways, and every other arrangement for washing and dressing the ore. I only see one thing wanting to make the mine complete and profitable—that is, to get at the bottom, and the sooner you do this the better. It might be needful to say, should the standard of copper get to the average price of late years, you could get several hundred tons from the old workings, that would pay well, with your present improved means of washing and dressing; still I believe you will not need it, if you will work the bottom of the mine.

GREAT MICHELL CONSOLS.—Capt. Thomas Richards (May 3) reports—In consequence of one of the underground rods and pulley breaking, but little has been done in the sump winze during the past week; the lode therein is without material alteration, containing mundic, ore, fluor, capel, and spar. In the 35 fm. level, west of the sump winze, the lode consists of mundic, capel, spar, and ore, opening tribute ground.

HERODSFOOT.—Capt. S. Richards reports—The engine-shaft is down nearly 6 fms. below the 94 fm. level, in favourable ground; in this level south, now driven 6 fms., the lode, the greater part of the way, is divided into two branches, and is rather poor; but, in and near the end, the lode altogether is full 2 ft. wide, having a very promising appearance, and, as it now is, will produce ½ ton of ore per fm. The end of this level north has been driven on the course of a small branch 5 fms.; and, by cutting into the western side of the level, near the end, the main part of the lode was found, and is 3½ ft. wide, a very fine-looking lode, producing 1 ton of ore per fm.; there is a good prospect of large quantities of ore turning out from the backs of this level up to the 82 fm. level above. The lode in the 82 fm. level north, 45 fms. from the engine-shaft, is 20 in. wide, producing ¾ ton of ore per fm.; in this level south, 50 fms. from shaft, the lode is 2½ ft. wide, yielding 1 ton of lead ore per fm.—two pitches are working in the back of this level, which are turning out well. In the 72 fm. level south, the lode has been cut into 4 fms. behind the present end—a pile of stuff prevented my seeing it; but I was informed by the men that it is 2 ft. wide, tolerably good. The end is driving on the course of a small branch, a short distance west of the lode, where the ground is easier to drive than on the lode—this end is 64 fms. from shaft; the pitches in the backs are looking well. The north end of this level, 51 fms. from shaft, is 20 in. wide, producing ½ ton of ore per fm.; there are three pitches working in the back. The 62 fm. level south is suspended; one pitch is working in the back of this level, and is turning out well. In the north, 45 fms. from shaft, the lode is 18 in. wide, producing ½ ton per fm.; there is no ground taken away in the back of this level for 25 fms. below the end. There are four men employed in each of the ends now driving. In the 52 fm. level south, a rise against Windsor shaft has been commenced, and is now 2 fms. above the back of the level; above 25 fms. remain to be spent by rising and sinking, to open this shaft to surface, which, when done, will, no doubt, ventilate a great part of the mine, which is at present much wanted. After this is completed, and the steam-whim set to work, a greater number of men may be employed to advantage, by which greater returns can be made, and the profit (which is now about 150*l.* per month) considerably increased. There is now more available ground opening by driving than the tributers are taking away; and the mine, upon the whole, is looking very well.

HOLMBUSH.—Capt. W. Lean (May 2) reports—The water is drawn out of the diagonal shaft to the 132 fm. level, where we shall now commence operations. The lode in the 120 fm. level north is 4½ ft. wide, composed of flookan, soft spar, and spots of lead; the lode in the south end, in this level, is 6½ ft. wide, composed of spar, white iron, and lead, worth 8*l.* per fm—a very strong, promising lode, much more so than it was in the levels above it. The lode in the 110 fm. level south is 5 ft. wide, composed of quartz and lead, worth 5*l.* per fm.; the stopes, in the back of this level, is also worth 5*l.* per fm. The lode in the 100 fm. level south is 2½ ft. wide, composed of soft spar and lead, worth 5*l.* per fm.; the lode in the rise, in the back of this level, is 2 ft. wide, composed of spar, spotted with lead—saving work for stamps; the lode in the winze, in the bottom of this level, is 12 in. wide, composed of spar and stones of lead, promising a further improvement as we get deeper; the flap-jack lode, in the 100 fm. level east, is 3 ft. wide between the walls, composed of mundic, blende, spar, and spots of copper ore. The lode in the 90 fm. level south is 2 ft. wide, composed of soft spar and stones of lead, all of which is saved for the stamps. We weighed, at Calstock, on Friday last, February and March ores, 98 tons 15 cwts.

KIRKCUDBRIGHTSHIRE.—The agents (April 29) report—Cross-cutting north in the 50 fm. level, we have just cut into the branch which we expected to intersect; it produces some fine stones of lead—but as we have not yet discovered the north wall, I am unable to inform you of its size or value. The lode in the 40 fm. level end west is about 3½ ft. wide, yielding stones of ore; in the same level, driving east on the caunter, the lode is 2 ft. wide, producing stones of lead ore. Driving west of Keith's shaft, in the 30 fm. level, the lode is 3 ft. wide, producing ¾ of a ton per fm. In the bottom of Keith's shaft, the lode is small, about 18 in. wide, and but little ore in it; we shall now commence driving east from the bottom of this shaft, to meet the 40 fm. level, coming west from Stewart's. The lode in the 30 fm. level end, driving east from Stewart's, is about 2 ft. wide, still improving in appearance, and now producing stones of lead; we hope this lode will become productive again as it approaches Crouche's shaft.

LEWIS.—The mine agent (April 29) reports—The lode in the 70 fm. level, west of sump-whim shaft, is 2 ft. wide, saving work for tin, and very promising; the ground in the 70 south is much harder than usual. The lode in the 60 east, on south branch, is 5 in. wide, much improved since my last; the lode in the 60 west, on south branch, is 2½ ft. wide, worth 30*l.* per fm. The lode in the 50 east is 10 in. wide, worth 7*l.* 10s. per fm.; in the 50 fm. level south, from sump-whim shaft, we have intersected the south branch, where we find it very promising, opening ground that will work at or about 7s. 6d. tribute. We have holed the winze sinking below the 40 (on the south branch), to the rise in the back of the 50, where we have now a good ventilation, by which the tributers will be enabled to work the ground at a much lower tribute. The lode in the 40 east is 6 in. wide, yielding fair quality tinstuff—driving at 15s. per fm., and 10s. tribute. Our tributers, generally speaking, are making fair wages at their different tributes. We sold this day a parcel of tin, as follows:—

[COPY.]

Angarrack Smelting-House, 28th April.—Lewis Mines, St. Erth.

		Price per ton.	Total.
No. 1	Tons 13 8 3 2	£43 17 6	£589 12 2
No. 2.....	1 19 2 15	40 10 0	80 5 2
Carriage.....	15 8 1 17	0 10 0	7 14 2
Total			£677 11 6

MENDIP HILLS.—Capt. F. C. Harpur (May 1) reports—In the 38 fm. level, south of the shaft, the ground continues favourable for driving; the lode, which is about 3 ft. 6 in. wide, presents much the same appearance as last week, composed of flookan, spar, and iron, with small cubes of lead at times. In the slag department, in laying open the cutting towards the more productive part of the valley, we find the bed of slagstuff to be precisely the same, both in quantity and quality, as last reported—some parts of which is work of fair quality, and at others intermixed with layers of rubbish. This we shall, undoubtedly, find to be the case, until we reach the more settled channel of slag ground, which I shortly anticipate, as we are drawing near one of the trial pits, where we extracted some very good slags. We have a large pile of slags prepared for the furnaces—I should say sufficient to keep us smelting the whole of this week.

POLSAITH CONSOLS.—Capt. J. Spargo (May 2) reports—According to your request, I have minutely examined this mine, and find the sett to be nearly 600 fms. in length, and from 300 to 400 fms. in breadth; the lode has been opened on by costean pits for nearly the whole length of the sett, in which the lode has a very kindly appearance, varying in size from 2 to 3 ft. wide, composed of gossan, bright yellow sandy mundic, small quantities of white iron, and spots of grey copper. They have driven north, on the course of the lode, from Polsaith beach, about 25 fms.; the lode here varies in size, from 4 to 7 ft. wide, with two well-defined walls, and underlays west about 3 ft. in a fm.; its course is about 30° north of east, and has a very promising appearance; this end is now about 12 fms. deep from surface; they have sunk on the course of this lode in the bottom of this level, and have broken large stones of rich lead, imbedded in a most splendid gossan, which are now to be seen at the surface; the country, about the lode, for 1 ft. thick, is chiefly of a soft grey elvan. Although the vicinity, or adjoining strata, at the surface is of a dark reddish clay-slate, yet there is every reason to expect that it does not continue of that nature in depth, as the country is traversed with small elvan dykes, numerous flookans, and small veins of quartz, forming different angles, which will ultimately have a tendency to enrich the lode, as well as change the nature of the strata. There is another adit level, driven from the south valley, on the course of the lode, in the Trebetherick hill, which is of a promising character, chiefly composed of gossan, quartz, spar, and stones of rich lead ore, which I see from an arch of the lode that is left in the back of the level; the lode here, both in the back and bottom, is worked away on tribute for a great many fathoms in length, and is from 2½ to 3 ft. wide. There is an engine-shaft sunk several fathoms under the adit level—and I am given to understand, they have intersected the lode, and broken good stones of lead; but the water being so powerful, and having no machinery, they were unable to see the size of the lode, or take its regular bearing. The mine is situated in a good mineralised district for lead; it is bounded north by the Pentire glaze sett, from which thousands of pounds' worth of lead have been returned about sea level; and the lode here is a continuance of, or parallel to, the above. There are other lodes running through the sett; but they have not been opened on sufficiently so as to ascertain their value—but there is no doubt they will prove productive in depth, as already good stones of lead have been broken from them. It is my opinion, that the lode will be subjected to large pipes of lead in the deeper levels, as the elvan dykes appear to cross the lode chiefly in a serpentine or zig-zag course. By minutely examining the face of the cliff

the strata appears to be full of fibres, or veins, of metallic substances, dipping towards the lode; and it is my real opinion that, in deeper levels, it will turn out a profitable investment, especially in the valley, as the dip of the shelf, and every fibre, vein, &c., in the Trebetherick hill, are rapidly declining towards it. I should recommend you to lose no time in getting down your shafts, so as to drive under sea level; and there is not a doubt on my mind but that it will shortly turn out an abundance of lead, which will amply reward you for your outlay.

SOUTH WHEAL TRELAWNY.—Captain W. Lean (April 29) reports—The engine-shaft is sunk 29 fms. 3 ft. below the adit level, the ground in which is soft, but, at the same time, it is not so speedy for exploring as we have many times seen it; we purpose sinking it a little deeper, for cistern, fork, &c., and then commence driving a cross-cut west, to intersect the lode, and at the same time cut ground for cistern, fixing plunger-lift, &c., in the 30, preparatory to the intersection of the lode, when we may reasonably calculate on meeting with more water; at present, it is no more than two strokes per minute. We shall commence driving the cross-cut in about a fortnight.

TRELEIGH CONSOLS.—Capt. William Symons (April 28) reports—The 120 cross-cut, north of Christoe's, is intended to cut the lode, west of the slide, in 3 or 4 fms. more. The 100, east of Christoe's, is suspended, until we hole the rise to the tributers' bottoms; the rise, above the 100 east (new), will be in the east end of the pitch, now working below the 90 fm. level, at 8s. 6d. tribute—it is poor to commence with. Garden's shaft, below the 100, is sinking in the country—the lode standing 3 ft. north of the perpendicular; in the 100, west of ditto, the lode is 2½ ft. wide, rather improved, worth about 3l. per fm.; in the 100, east of ditto, the lode is 20 in. wide, no mineral. In the 90, west of ditto, the lode is about 1 ft. wide, with stones of ore, not to value. In the rise, above the 80 west, the lode is 18 in. wide, with stones of ore only. In the 70, west of ditto, the lode is 18 in. wide, worth 3l. per fm., and very promising. In the 60, west of ditto, the lode is 2½ ft. wide, worth 6l. per fm., looking more kindly. In the 50, west of ditto, the lode is 15 in. wide, with occasional stones of ore; in the adit east, on Wheal Parent lode, the lode is 2 ft. wide, with stones of ore—it has a very kindly appearance; the adit, north of engine-shaft, is driving to cut Wheal Orphan lode, which we think is not far from us. The rise above the 60 west is set on tribute; this is nearly up to the 50 fm. level—the 50 being 4 fms. behind it.

WEST WHEAL JEWEL.—Capt. Richard Johns (May 1) reports—The winze in the bottom of the 57 fm. level, west of Williams's cross-course, on Wheal Jewel lode, is 3 fms. below the level; we hope, by the end of this week, it will be communicated to the rise in the back of the 70 fm. level; the lode cannot be taken down until it is communicated to the rise to let down the water; in the 70 fm. level, west of Williams's cross-course, on the same lode, the lode is 1 ft. wide, producing little ore—ground harder for driving; in the rise, in the back of the 70 fm. level, west of Williams's cross-course, on the same lode, the lode is 15 in. wide, worth 6l. per fm.; in the deep adit, west of Hodges's cross-course, on the same lode, the lode is 1 ft. wide, composed of spar and peach, with little ore; in the stopes, west of Pryor's winze, on Tolcarne tin lode, the lode is 4 ft. wide, worth 34l. per fm. In the stopes in the back of the 12 fm. level, east of Pryor's winze, on the same lode, the lode is 4 ft. wide, worth 26l. per fm.

WEST WHEAL MARIA.—Captain Thomas Rodda reports—The western engine-shaft is down below the 64 fm. level about 8½ fms., the ground in which, for sinking, is without important alteration. The south lode, in the 34 fathom level, west of Vivian's shaft, is about 3 ft. wide, with occasional spots of ore.

WHEAL ADAMS.—Capt. J. Prince (May 3) reports—In clearing the new engine-shaft, below the 50 fm. level, are badly crushed in one part of it, more especially in the south end and western side, where the flookan comes in. We are now engaged in re-timbering it, and hope soon to reach firm ground, with timber secure The water in the 50 is very materially decreased, and the lode opened on in the back of the end is 9 ft. wide, producing about 1 ton of lead per fathom. The level on the western silver-lead lode is being cleared and timbered as fast as possible, but the air is so bad that we cannot at present work to advantage, nor can we ventilate this part in the present month, so as to expedite the workings, but everything in our power shall be done to reach the whole ground with as little delay as possible.

WHEAL MARY ANN.—Capt. Peter Clymo, Jun., (May 2) reports—The lode in the 40 fm. level, south of the boundary, is much improved since my last report; it is now 3 ft. wide, and worth 16l. per fm.; also, since the last report, the water being drained. We recommend sinking Barratt's shaft, which is now 5 fms. below the 30 fm. level, where the lode is 8½ ft. wide, and worth 12l. per fm. The lode in the 30 fm. level, south of Barratt's shaft, is 3 ft. wide, and worth 7l. per fm. Pollard's shaft is sunk 3 fms. under the 30 fm. level; The lode in the 30 fm. level, north of Pollard's shaft, is 1 ft. wide, producing some stones of lead; in the same level south it is 2 ft. wide, composed of can and lead, and worth 4l. per fm. The lode in the 15 fm. level, south of Pollard's shaft, is 2 ft. wide, and worth 5l. per fm. The stopes are looking well.

WHEAL SARAH (St. Kew).—Capt. J. Spargo (May 3) reports—We have commenced sinking a new engine-shaft, in the valley, about 60 fms. south of the old shaft, by six men, at 2l. 10s. per fm.; and they are getting on satisfactorily.

WHEAL TRELAWNY.—Captain J. Bryant (May 1) reports—In sinking Phillips's shaft under the 62, and cutting tipplat, we are progressing satisfactorily. The lode in the 62 fm. level north is 3 ft. wide, composed of spar, can, and lead—worth 10l. per fm.; in this level south, the lode is 2 ft. wide, composed of spar, can, mundic, and lead—worth 7l. per fm. We set a winze to sink under the 52 on Friday last, in order to ventilate the 62, and open ground for stoping. The lode in the 52 fm. level north is not so good as when last reported; in this level south, the lode is still large—worth about 5l. per fm.; the stopes in the back of this level are much as usual—producing a fair quantity of ore. The lode in the 42 fm. level north is worth 6l. per fm.; the ground here is rather hard, consequently we cannot extend so fast as we could wish; the stopes in the back of this level are very similar to my last report. The stopes in the back of the 32 fm. level, and bottom of the 22 are producing a fair quantity of ore. Trelawny's engine-shaft will be sunk, by the end of this week, 12 fms. under the 42, when we shall commence to drive a cross-cut west, towards the lode, and hole to the 52, north of Phillips's shaft, with all possible speed; by doing this, we shall be opening ground for stoping sooner than we could in any other way, as well as bring the water from Phillips's engine to Trelawny's, in the 52, instead of the 42 fm. level. In the 22 cross-cut, east of Trelawny's shaft, the ground is somewhat eased for driving; and, the country being strongly mineralised, we think there is a great probability of our meeting with a lode shortly. At Vivian's, the lode in the 80 fm. level north is 2 ft. wide, composed of spar, can, and mundic, with a little lead. We have 10 ft. more to drive in this end, to get under Smith's shaft, which I expect will be spent by Thursday next, when we shall rise on the lode; and, the shaft being now down 14 fms. from the surface, I think we may fairly expect, by sinking and rising, to communicate it with the 30 in three weeks; this shaft will ventilate this part of the mine, where the air is at present insufficient; and we shall then be able to proceed vigorously with the 30 fm. level north, and stope the ground now discovered; as well as being much more convenient for discharging the stuff. We shall sample to-day a parcel of ores, computed at eighty-eight tons.

FOREIGN MINES.

ALTEN MINES.—The following is the estimated produce for the month of March:—

Mines.	Tons ore.	Per ct.	Tons copper.
Raipas	60	6	3·60
United Mines	38	6	2·28
Ryper's	4	6	0·24
Mancur's	2	5	0·10
Michell's	5	6	0·30
Old Mine	34	6	2·04
Cole's	2	4	0·08
New Lodes	3	6	0·18
Total	148		8·82

Mining Report, from the 18th March to the 7th April.

Raipas.—Monk's shaft is now in the level of the 20th, and we have commenced cutting a plat. We expect to commence driving about the end of this month. The capels of the lode, containing rich stones of purple ore, are still found in the side of the shaft, and we hope the plat will again lay open the lode, and enable us to drive the level without much preparatory work. The result of my survey (made a few days ago) shows a distance of about 10 fathoms between this shaft and the 20 fm. level, driving westerly; this level has made good progress from the old workings, and the ground has been very favourable for excavating; within the last two or three days, the jaspery slate has been cut through, and the metalliferous limestone stratum has again been penetrated. We may shortly expect to intersect some of the veins and branches worked on in the shallow workings. The 15 fm. level continues to hold out very flattering prospects, although the hard and compact nature of the quartzose stratum—which the lode has now entered—subjects us to serious inconvenience. The ore from this level (specimens of which accompany this report) is extremely rich, but the greatest part of the produce is so intimately blended with the slate and ferruginous quartz, that its separation is a matter of great difficulty, and, in many instances, an almost impossibility. The 10 fm. level workings are looking rather better, but the north-east stope, in particular, has improved in this level, as well as in the 5 fm. stope; the prospects are very good, but the quality of the ore is much deteriorated by the uncongenial stratum of quartz in which we are working. Carr's lode, although undefined and irregular, still continues to yield fair returns. We are now engaged in cutting down the sides of shaft No. 1, previous to resuming the workings underneath. The arrival of the whim pulleys will shortly enable us to resume the old five fathom stope in shaft No. 2. We hope to get up the "puppet-heads" in the early part of next week, and shall immediately after clear the run; by the end of this month we may expect to have this part of the mine in work again: the present estimate is lower than the actual produce of the month, and is founded on the quantity of ore which we expect to deliver to the smelting-house—the smalls being poor, and requiring to be dressed in the summer, are not taken into account. During the past week I have narrowly investigated the cause of the deterioration in produce in the last and present month, and find it attributable to an admixture of black ferruginous quartz, thickly disseminated throughout the purple ore, and which cannot be separated by mechanical manipulation, but must be subjected to a difficult and expensive smelting process, before the contents of metal can be obtained. I shall still continue to give this subject my attention, in the hope of being able to introduce some better system of returning the produce at a less cost.

United Mines.—The result of the workings has been satisfactory—the returns are regular, and the prospects continue good. The tributers on Hoskins's lode have made some small returns of ore of superior quality; as have also those workings at Woodfall's. From Petherick's lode we are also getting a small quantity of ore, and the workings on Ward's lode have even exceeded our expectations. The ice at Woodfall's still subjects us to much inconvenience and great expense.

Ryper's.—No improvement is to be noted in the old workings; our principal operations are confined to tribute—so that they will not, in future, entail a loss in exploring.

Mancur's.—The operations at this mine are also, for the present, confined to tribute pitches in the old stopes and attle burrows; we do not expect any improvement before the summer, when we hope to be able to resume the explorations at the surface.

Michell's.—Some months must still elapse before we can resume several of the most productive parts of the mine from which we are still frozen out; this month we have set some tribute pitches above the adit, where we expect to find sufficient ore to pay the costs.

Old Mine.—The result of our tribute operations has been very successful this month, as you will perceive by the list of settings; we have commenced driving a level (partly on tribute and partly on tutwork), for the purpose of opening ground above the adit level, east of Bergmeister's shaft. In my present despatch to your board, I have made a proposition for draining the extensive workings under the adit level, by means of a syphon, which I think will be found very practicable, and shall be glad to learn that you coincide in my views: an excessive water charge was formerly the great obstacle in our deeper workings; but as the depth of those perpendicularly below the adit does not exceed the height at which water is forced in vacuum by the atmosphere, and having, at least, 200 ft. fall on the side of the mountain, outside the adit, I think the use of the syphon would be very applicable, and enable us to drain those workings with the most trifling cost, of either manual labour or machinery—the whole of the expense consisting in the purchase of, and laying down, about 300 fms. of air-tight pipes.

Cole's.—We have as yet no improvement to note. One of the lodes in the sink contains good ore, but in small quantity; and as the distance to sink to meet the junction of this with the other two lodes will not be more than 3 or 4 fms., we consider it would be advisable to complete this depth before the workings are abandoned.

New Lodes.—Our operations are still confined to Mathisen's valley, where the returns are small, but remunerative. The tributers have also been rather more successful last month, and are again working with great spirit; we have again arrived at the most disadvantageous part of the whole year for the produce and returns. By reference to all the reports forwarded, since the commencement of the works, the produce will be found invariably to fall off about this time of the year. Any apparent falling off, however, in these months' estimates will be made good again in the summer.

DEVON GREAT CONSOLIDATED COPPER MINING COMPANY.

The fourth annual general meeting of shareholders was held at the offices, Barge-yard Chambers, Bucklersbury, on Monday, the 1st inst.

W. A. Thomas, Esq., in the chair.

The Chairman opened the proceedings of the meeting, by drawing attention to the directors and managers' reports, which were read; and, from the voluminous explanatory and statistical character of the latter, it occupied nearly three quarters of an hour in reading.

The financial statements were entered into, and a general conversation ensued, which resulted in an unanimous approval of its correctness, and admiration of its systematic keeping.

DIRECTORS' REPORT.

The directors have the pleasure to submit to the shareholders of the Devonshire Great Consolidated Copper Mining Company the fourth annual balance-sheet of receipts and expenditure, and that of assets and liabilities, with the report of the auditors thereon—copies of which have been forwarded to each shareholder, agreeably to the provisions of the Joint-Stock Companies' Registration Act. By a comparison of these documents with those of the preceding year, it will be evident, not only that the productiveness of the mines continues, but that the quality of the ores has been fully maintained—the average price per ton at which they were sold exceeding that of the previous year; the price of the one being about 6l. 14s. per ton on an average produce of 10¾ tons, and of the other 6l. 3s. on an average produce of 10¼ tons. From the advance which took place in the price of copper, in the early part of last year, the directors fully expected that still better results would have been realised for the company's ores; but the commercial crisis, which has operated so prejudicially on other branches of trade, has also affected that of copper, causing an accumulation of stocks of copper beyond its present requirements. They trust however, that a return of confidence, and the resumption of business on a larger scale, will enable them, at no very distant period, to obtain better, and, it is hoped, more adequately remunerating, prices for the company's ores.

The difficulty of obtaining discounts during periods of commercial panic, convinced the directors of the necessity of placing the finances of the company in a position entirely independent of the money market. This has been accomplished by the detention, for a short period, of the dividends, and by the sale of Exchequer Bills held in reserve—as will be seen on reference to the balance-sheets—Part I. showing an actual balance in hand on the 1st March last, of 14,033l. 14s. 9d., against 3048l. 7s. 3d., at the corresponding period last year; whilst the balance of assets, beyond liabilities, was 49,264l. 3s. 11d., which, compared with 25,544l. 9s. 2d. at the same period last year, shows an increased balance in favour of the company of 23,719l. 14s. 9d., which, it is presumed, is a sufficient evidence of the prosperity of the company. It is not in the power of the directors to report any diminution in the expenses; on the contrary, it will be seen that they have exceeded those of the previous year. Much of this additional outlay has been for machinery, which is accounted for in the estimate of property of the company, and it is evident that this item of expense must necessarily increase with the extension of the works—they regret, therefore, they cannot hold out the expectation of any reduction, so long as the progressive development of the company's property shall proceed on the scale at present maintained. It would, indeed, be unwise to arrest its progress by withdrawing the funds required for its accomplishment, so long as new and splendid discoveries are making, and the prospective resources of the company thereby increased. In order to obtain the strictest supervision of the finance department at the mines, and the undivided attention of Mr. Hitchins, the principal superintendent of the mining department, it has been thought advisable to separate these two departments—the duties of which, when connected, had become, through the extended operations of the company, too onerous for a single individual, to permit him to give them the scrutiny they required.

It seemed particularly desirable that the superintendence of this important department should be confided to a member of the board of directors; and the directors congratulate the shareholders on the acceptance, by Mr. Thomas Morris, of the management of this department. A resolution, confirming the same, will be submitted to the meeting this day. The large interest he holds in the company, added to his practical knowledge of business generally, are sufficient guarantees for its most effectual superintendence—at the same time, insuring the purchase of materials in the best and cheapest market. The lamented decease of one of your directors (Wm. Morris, Esq.) rendered it necessary to supply the vacancy, which was accordingly done by the election of Mr. Francis Morris, at an extraordinary general meeting, held on the 23d December last—at the same time, that gentleman was appointed the trustee of the company. All the directors, agreeably to the provisions of the Deed of Settlement, go out of office this day, and beg to offer themselves for re-election; Mr. Joseph Deane Browne and Mr. Hananel De Castro will be proposed for auditors of the company.

In conclusion, the directors cannot refrain from congratulating the shareholders on the splendid discovery recently made, about 700 fms. eastward of Wheal Josiah, which has been named Wheal Emma, as well as the extraordinary improvement in Wheal Fanny—further details of which will be found in Mr. Hitchins's comprehensive report of the state and prospects of the mines, which has been compiled with the elaborate care and circumstantial arrangement he usually applies to such documents.

PART I.—*Balance-Sheet of the Devonshire Great Consolidated Copper Mining Company, from 1st March, 1847, to 1st March, 1848.*

Dr. RECEIPTS.

Balance from last account		£3048 7	3
Carriage of ores outstanding per last account, since received		1016 13	11
Sales of copper ores raised from January to December, 1847, both months inclusive:—14,413 tons 6 cwts. 3 qrs.—realising	£96727 16 2		
Carriage of the above	£6161 16 1		
Deduct amount outstanding on the 1st March	972 18 7	5188 17	6
		101916 13	8
Fees on transfers of shares, and for new certificates		20 16	0
Interest on Exchequer Bills	£ 77 9 8		
Sale of 8300l. Exchequer Bills	8497 10 5		
	£8575 0 1		
Deduct cost of 5500l. Exchequer Bills	5564 7 3		
		3010 12	10
Income tax, deducted from dividends paid	£448 0 0		
Ditto from dues paid	229 15 0	677 15	0
Gawton Quay, received in repayment of advances		174 6	11
Total		£109,865 5	7
Balance brought down	£14,033 14s. 9d.		

Cr. EXPENDITURE.

Mines' cost, from January to December, 4187, both months inclusive		£57084 11	6
Dues on ores, sold from Jan. to Dec., 1847, both months inclusive		7881 9	5
Remitted on account of mines' cost for January, 1848		3957 11	0
Agent's commission on dividends paid		320 0	0
Poor's rate and other taxes at Tavistock		1053 7	3
Expenses in London—viz.: Discounts, 243l. 16s.; travelling expenses, 21l. 11s. 6d.; compensation to directors and auditors, 231l. 10s.—Office expenses: salaries of secretary and clerk, rent of offices, stationery, postages, survey and plans of sett, printing reports, solicitor's bills, and incidental expenses, 745l. 16s. 10d.		1242 14	4
Income tax—one year, to Michaelmas last		1458 6	8
Timber imported for use at the mines		7628 14	4
Dividends paid, 15l. per share on 1024 shares	£15360 0 0		
Deduct unclaimed dividends	155 3 8	15204 16	4
Balance—viz.: Cash at the bankers in London, 1428l. 19s. 4d.; ditto at Tavistock Bank, 200l.; petty cash in the office, 25l. 15s. 4d.; bills receivable, 8379l. 0s. 1d.; money lent out at interest, returnable on demand, 4000l.		14033 14	9
Total		£109,865 5	7

Examined— (Signed) W. A. Thomas, Jno. Thomas, F. Morris,—directors.

PART II.—*Balance-Sheet of the Devonshire Great Consolidated Copper Mining Company, from 1st March, 1847, to 1st March, 1848.*

Dr. LIABILITIES.

Balance of January cost		£998 8	3
Cost for February, including merchants' bills, estimated at		5000 0	0
Dues on ores sold 20th January, 1848	£623 15 0		
ditto 17th February, estimated at	630 0 0		
ditto, for sale 23d March, estimated at	600 0 0		
ditto, at grass and on halvans, estimated	500 0 0	2353 15	3
Draft for iron purchased, due 3d May		292 14	0
Ditto for steam-engine erected at Wheal Anna Maria, due 30th June		375 0	0
Income tax on dividends and dues		729 3	4
Unclaimed dividends		155 3	8
Salaries, rent, &c.		600 0	0
Balance carried down		49264 3	11
Total		£59,768 8	5

Cr. ASSETS.	Value according to last estimate.	
Copper ores raised in January, and sold 17th Feb., 1848, carriage included	£9553 15	9
Copper ores raised in February, to be sold 23d March, valued at	8151 0	0
Copper ores at grass, valued at	2400 0	0
Halvans, slimes, &c., valued at	3891 0	0
Steam-engines, bobs, rods, &c., at Wns. Maria, Josiah, and Anna Maria	3300 0	0
Pumps, pitwork, &c., at Wheals Maria, Fanny, Anna Maria, and Josiah	2342 0	0
Drawing machines, crushing engines, jigging hutches, sheds on dressing-floors, scales and weights, capstan and shears, tram-roads and waggons, ropes, chains and kibbles, dressing tools, flat-rods and horse-whims, Smiths' and miners' tools, horses and harness, &c., tram-roads and air-pipes underground	7420 0	0
Air-machine and pipes at Wheal Fremontor	400 0	0
Timber in stock	3728 0	0
Iron in stock	1080 0	0
Coals, powder, nails, steel, sieves, and sundries, in store	1028 1	7
Counting-house furniture at the mines	250 0	0
ditto in London	50 0	0
Amount due for carriage of ores to 31st December, 1847, per Part I.	972 18	7
Balance of advances for Gawton Quay	657 17	9
Balance per Part I.	14033 14	9
Total	£59,768 8	5

Balance brought down £49,264 3 11

Examined— (Signed) Jno. Thomas; W. A. Thomas; F. Morris,—Directors.

PART III.—*Copy of the Report by the Auditors of the Devonshire Great Consolidated Copper Mining Company.*

We, the undersigned, having examined the within balance-sheet, Part I., of receipts and expenditure of the Devonshire Great Consolidated Copper Mining Company from the 1st March, 1847, to the 1st March, 1848, and compared the bankers' book and cash book with the receipts and payments, find the same to be correct. We also find that the balance of 1428l. 19s. 4d., in the hands of the bankers, agrees with the pass book, and that there is a balance of 200l. at the Tavistock Bank; that bills, amounting to 8379l. 0s. 1d., were in hand on the 1st March, and the sum of 4000l. lent out on interest at call.

(Signed) Chas. Fox and J. Deane Browne, Auditors.

A resolution was then moved, seconded, and carried,—That the report of the directors and balance sheets, together with the report of the auditors thereon, be received and adopted, and that the same, as well as Mr. Hitchins's report on the mines, be printed, and a copy sent to each shareholder.

Resolutions were also passed, re-electing the directors who went out of office that day, and appointing J. D. Browne, Esq., and H. De Castro, Esq., auditors for the present year.—The thanks of the meeting having been voted to Mr. Hitchins, for the zeal and ability displayed by him in conducting the operations of the company during the past year, and to the chairman, for his courteous behaviour in the chair that day, the meeting separated.

DEAN PRIOR AND BUCKFASTLEIGH MINING COMPANY.

An ordinary general meeting of adventurers was held at the offices, 25, Fleet-street, on Monday, the 1st inst.

W. P. Courtenay, Esq., in the chair.

The Chairman having referred to the report the committee had received from Capt. Carpenter, who had been deputed to inspect and report upon the mine from time to time, and to the section and underground plan and extent of the workings, as shown in the section, proceeded to observe, that although a larger sum had been expended, and, indeed, more would be required to effect the objects they had in view—that of sinking to a further depth of 20 fms., and extending their several levels into Sir I. Y. Buller's lands—yet it was satisfactory to be able to announce, that a small sampling had been made of about 18 tons; while, he was given to understand, there was about 6 to 8 tons in course of dressing. The quality, however, he regretted to say, he feared would not realise the expectations they had been led to entertain; however, it would be wrong for him to express himself otherwise than in a general manner, as the actual produce would be tested at an early day.

The Purser read an abstract of the accounts, from which it appeared, that the expenditure, for the first three months of the present year, amounted to 367l. 19s.; and that the balance in hand, to meet the April cost, was 77l. 5s.; in addition to which, there were arrears of calls, 128l. 10s.: making, together, 205l. 15s. In addition to the April cost, and that of the current month, it was right to state, that there were certain liabilities, which, as appeared by the accounts laid on the table, amounted to 575l. He, therefore, submitted, that an immediate call would be necessary, and which, after much discussion, was agreed upon—a call of 2l. per share being made, a moiety of which payable on the 9th inst., and the other on the 9th proximo. Some stones of ore, from the present points of working, were laid on the table.

Thanks having been voted to the chairman, the meeting separated.

A special general meeting of adventurers was also held at the offices, on Monday, the 1st inst., for the purpose of considering and determining on the forfeiture of such shares, the calls made on which should remain unpaid.

W. P. Courtenay, Esq., in the chair.

The Chairman briefly stated the objects of the meeting, referring to the express rule entered in the cost-book, and which had been recognised by the body of adventurers, authorising any special meeting, convened for the purpose, proceeding to the absolute forfeiture of any shares in arrear, the chairman observing, it was right that the adventure should be carried on in uniformity with the rules laid down.—The Purser, on referring to the cost-book, read the names of the defaulters, from which it appeared that 58 shares were in arrear, on which 128l. 10s. was due; whereupon it was unanimously resolved, that such shares be absolutely forfeited, unless the instalments due thereon be paid on or before the 31st inst.—There being no other business before the meeting, it was declared dissolved.

WHEAL ANDERTON MINING COMPANY.

A general meeting of adventurers was held at Royal Hotel, Plymouth, on the 27th of April—Capt. J. Toby, R.N., in the chair.—A statement of accounts was submitted, showing—Paid Captain Carpenter, on account of debt due Jan. 26, 229l. 10s. 10d.; labour cost for Jan., Feb., and March, 471l. 16s. 4d.; carriage and whim-work, 48l. 4s. 6d.; merchants' bills, 488l. 12s. 7d.; lord's dues, 28l. 11s. 9d.; agency and other expenses, 54l. 14s. 1d.; errors in cost-book, 14l. 18s. 1d. = 1336l. 8s. 2d.—By sale of Jan. tin, 188l. 8s. 10d.; ditto Feb., 221l. 9s. 8d.; ditto March (say), 200l.; received on calls, 670l.; leaving balance due to purser, 56l. 9s. 8d.

Shares having calls due are to be forfeited, unless paid upon within 21 days. Capt. Carpenter's report was received; and a call of 2l. per share made payable immediately.—Mr. E. L. Elliott, having resigned the pursership, Mr. James Carpenter was nominated to the duties until next meeting, when one is to be appointed.—The following gentlemen were appointed auditors: Messrs. T. W. Liscombe, J. Paull, J. Payne, W. E. Elliott and Seaman.—The report read at the meeting was dated the 27th ult.—Capt. Carpenter, in a subsequent report (the 3d inst.) adds—"I am happy to say, there is a great improvement in the 60 and 70 fm. levels since the report of the 27th ult.; the shaft is sunk to the present intended depth for an 80 fm. level, plat, &c.; we shall commence cross-cutting to the lode on Monday next. We are preparing more tin for market as fast as possible, and hope the returns will increase rapidly."

South Wheal Francis.—At the two-monthly meeting of adventurers, the following accounts were passed, showing—By ores sold Feb. 3, 1575l. 13s. 4d.; ditto March 2, 2168l. 10s. 8d. = 3744l. 4s.—Labour cost for Feb. and March, 1370l. 12s. 6d.; merchants' bills, 778l. 11s. 10d.; lord's dues, 249l. 12s. 2d. = 2398l. 16s. 6d.—Showing profit, 1345l. 7s. 6d.; add balance in hand end of Jan., 310l. 5s. 1d. = 1655l. 12s. 7d.—Deduct dividend of 8l. per 1-124 share, 992l.: leaving balance now in hand, 663l. 12s. 7d.

West United Hills.—A meeting of shareholders was held at the office of the company, Parliament-street, on Friday, the 28th of April—Thomas Camplin, Esq., in the chair—when a call of 3l. per 256th share was made, for the purpose of erecting an engine and necessary machinery, and working the mine in an effectual manner.—Capt. Lean's report, which was to have been furnished us, has not yet been received.

West India Mail.—The *Forth* arrived at Southampton, yesterday, bringing home 93 passengers, and the following cargo:—8835,694 from the Pacific on merchants' account; 5075 ozs. gold dust; 958l. British coin; two boxes of pearls (950l.); three boxes of emeralds (80001.); 238 ozs. platina; one case of tortoishell; 78 tierces and 10 barrels of coffee; 62 serons of sarsaparilla; 50 tins of arrow-root; 152 bales of indigo; seven barrels of yams; and 28 small packages. The *Forth* left St. Thomas's on the 15th April.

ACCIDENTS.

West Wheal Jewel.—A miner was killed here on Friday last.

United Mines.—A lad met his death at Poldorey, on Thursday last.

Rowley Regis.—As W. Hodgetts and T. Mowsley were cutting coal in one of the pits at Mr. Mills's colliery, a quantity of coal fell and killed them.

Dudley.—J. Parker was killed by a fall of coal at Bunn's Lane Colliery.

Merthyr.—J. Thomas was killed by an explosion in one of the Rhydycew pits.

Cyfarthfa.—J. Griffiths was injured by a fall of stones and rubbish in the Coedcae pit.

Dancing Cairne Quarries, Aberdeen.—A miner, named Clark, lost his life by remaining too near the blast—his head and some of his limbs having been severed from his body by the explosion.

Wigan—The Inundated Coal Mines.—Great progress is now being made by the different proprietors, whose mines have been inundated, towards getting out the water. At one of the Patricroft pits, the water has almost entirely been got out, and it is expected that work will be resumed in a very short period.

Loscoe Colliery, Derby.—A poor boy, aged five years, named S. Cresswell, while waiting for his father, was killed by the rope breaking—one part striking him a blow on the head.

Died.—At the Imperial Brazilian Mining Company's establishment, Gongo Soco, in Brazil, on the 28th of January last, Mr. James Graham Battle, in his 22d year. He was greatly esteemed by the Chief Commissioner, William Jory Henwood, Esq., F.R.S., his brother officers, and the whole establishment, by whom his remains were attended with crrow to the grave.

FOURDRINIER'S PATENT SAFETY APPARATUS.

SIR,—It was with great satisfaction that I read in your paper, a few weeks ago, an account of the successful results of some experiments with the above apparatus in Staffordshire. My object in addressing you now is to inform you and by that means also the mineowners of the United Kingdom, that the patentee has just fixed one of his apparatus at the Gwan-cae-Gurwen Colliery; and I have much pleasure in assuring you, that we fully proved its capabilities yesterday, in the presence of several influential owners in this neighbourhood and it acted with entire satisfaction to them all—not descending more than 2 in. upon the guide chains, when the rope was detached. The advantages to men and masters will be equally beneficial—protecting the former from the fatal accidents that so frequently occur to them; and to the latter, by preventing the great destruction of property, whenever the rope, or chain, breaks. The apparatus has been applied to our present guide chains, and as it came ready fitted to the dimensions of the pit was readily attached to the cage, and put to work in half a day. Wishing most sincerely that the patentee may obtain that support and patronage his excellent invention so justly entitles him to hope and expect—I am, Sir, yours, &c.—D. LLOYD: *Cwmammon, near Llandilo, May 3.*

LEAD MINES.

SIR,—In your Money and Mining Article of last week, you say that "lead mines will become the favourites of the day;" now, as a lead miner, I am extremely sorry not to be able to agree with you. Are you not aware that, like all other articles of produce, lead ores, and I am bound to say lead also, are at present extremely depressed in price; and that, until a general revival of trade takes place, no great improvement can be expected in the demand for lead? In addition to this main cause of prevention to an improved value of lead mine shares, there is another which must operate very seriously, and that is the vast number of new lead concerns which are before the public, and all of them presenting extraordinary promise of productiveness—as one may gather from the prospectuses, and periodical reports which have been published.

The gross amount of lead ore produced from these various new concerns, during 1847, was not large, and we are not aware that their monthly sales will just yet oppress the market severely; but, judging from the share list value of the mines, one cannot but be alarmed for the future. There are, however, grounds for recommending caution to the unwary adventurer, and the young lead miner, which should be stated, in times like the present. It should be known that the fame and the immense profits of the East Wheal Rose Mine have caused an expenditure and loss upon lead lodes, or imagined lead lodes, in that Truro region, which are terrible to think of. The success at Wheal Trelawny has given birth to numerous little whals in the Liskeard district, too tedious to enumerate. The rich bunch of ore at Combmartin turned the heads of the North Devonians; and, farther up, the riches of Crich Cliff, in Derbyshire, caused many an old guinea to be laid out to bring back a new shilling in that hopeless county. The spirit of wild adventure never reached the large lead district of the north to any great extent—there, things proceed more equally.

Wales!—North and South Wales—those are the El Doradas!! Merioneth, Montgomery, Cardigan, and Carmarthenshire—those are the fields for enterprising spirits!! Merioneth has never yet produced a lead mine worth mentioning; Montgomery has had three or four good mines, and the Deliû Mine has long been steadily productive and profitable; Carmarthenshire has its Nant-y-Mwyn, a lasting, though not very rich nor largely profitable mine; Cardiganshire contains only three mining concerns, yielding a profit, and these of small amount at present prices—they are the Lisburne, Goginan, and the Llanfair Cledogo Mines; and, if I add to this the Cwymstwith Mine, upon which a new outlay is at present making, I specify the only four mines which have made any profit during the last half century. The number of trials made in Cardiganshire is very great, and the experience which has there been gained goes to prove that the district is full of lodes—that many, nay most of them, yield some ore, but that very few indeed will pay for working, in fact, that it is a district which must be approached with extreme caution. In proof of what I have said, I will enumerate some of the mines in Cardiganshire which have been undertaken within the last 15 years, and the amount of money said to have been expended upon them; much of this is total loss, but chances of discovery of course exist in those which are still at work—and we may, therefore, put it down as a debt against them—

Gogerddan Mines	£25,000	Crown Llanfair	£3,000
Esgair-hir and Tal-y-bont	20,000	Rhysgog	3,500
Crown Mines	15,000	Bwlch-cwm-erfin	3,500
Llancynfelyn	13,000	Penrhiw	3,000
Cwm-sebon	11,000	Pentrebrunant	2,000
Pen-y-cefn	7,500	Bryngias	1,000
Llwyn-malys	6,500	Ty-Llwyd	1,000
Rhaidol	6,000	Various small mines—say	3,000
Nanteos Mines and Blaen Cennant	5,000		
Gelly-etrin and Penpompren	4,500	Total	£137,500
Cardiganshire United	4,000		

This makes up a formidable sum; but it is said projects are on foot for working mines in Cardiganshire and Montgomeryshire, involving a still larger outlay: if such be the case, I trust, Mr. Editor, that you will counsel caution, as it is but right that parties should know that these counties have some rich mines, but very many poor ones, and that good bunches of ore there are few and very far between.

Scotland has also claimed some notice for its lead lodes of late, and the ticketing papers show an increased produce of ore there. I have not heard whether they can be profitably worked at present prices, nor seen any late statement of the accounts. Irish mines, like Irishmen, are somewhat at a discount at present, and they never promised to affect the lead market very seriously—let us hope that quieter times, and better prices, may again encourage their native industry. Caution and prudence are the lessons we would have you inculcate, Mr. Editor—legitimate mining requires all that can be done on its behalf to maintain its character, and your influence should at this moment of prostration, amongst mineral producers, be used to encourage people to husband their resources, in the hope of better days, and to restrain new outlays, which at this moment only tend to aggravate the evil we suffer from. LEAD MINER.

May 5.

THE COPPER TRADE.

SIR,—In your last paper I was rather astonished to find, from some remarks on the foreign copper ore duties, that the importations of copper ore into Hamburgh, in 1846, amounted to the enormous quantity of 60,000 tons; and, in 1847, it had increased to no less than 407,000 tons. Taking this latter quantity at 25 per cent., we have 100,000 tons of copper manufactured at Hamburgh in one year, which, I believe, is more than is made in this country in three years.

The above figures appeared also in the *Swansea Herald*, of Wednesday last, but neither paper says where all this copper comes from. The decrease of copper ore into Swansea does not amount to anything like 60,000 tons—leaving the larger quantity out of the question altogether. It appears to me incredible, that such an immense trade should have sprung up at Hamburgh in so short a time. As this subject is one of so much importance, especially to Swansea, it would, doubtless, be a subject of the greatest interest to many of your readers, if any of your well-informed correspondents would favour them with some particulars on the subject, and specify the source of such an immense quantity of copper ore.—A CONSTANT READER: *Swansea, May 1.*

SOUTH MARIA MINE.

SIR,—Being requested, in a friendly way, to visit this mine, I have done so, with a view of endeavouring to throw some light (if possible) on the mishap, or rather on the cause of the disappearance of the beautiful, promising north lode, as seen at grass. I am not officially employed, or paid any thing for what I do in this case; yet, for the encouragement of the South Maria adventurers, who have waded through difficulties to accomplish an object—viz: the cross-cutting of six east and west lodes—I think the non-appearance of the much-depended-upon north lode at the distance anticipated may be accounted for. The calculation from the dip north of the lode, as seen at grass, was but 6 inches per fathom; this, all miners know, is a small inclination; and, from the quantity of water coming from the end, I have no doubt of the lode underlaying faster in depth than is seen at grass, and is still near the north cross-cut end. Or another cause may account for its not being cut—Wheal Williams south lode is a caunter to the South Maria six east and west lodes, and crosses the north lode in the cross-cut about 9 fathoms north of the shaft. This caunter may have shifted the north lode further north in the heave; but, in either case, it cannot be far, and a lode of that quality is worth time and money to find. No. 1 lode, south of shaft, certainly should be driven on, as the large stones of rich ore now in the count-house, taken from it in the cross-cut, warrants any miner saying, that a lode of such quality will certainly be productive, either in this or the next level.

Further south, east and north branches are frequent, and, however small, are all of a kindly, orey nature, appearing, like the small branches of a tree springing from the trunk, all to point to the junction of the five said lodes, below where, without any presumption, I think the adventurers may naturally expect a rich deposit. A few fathoms further south, another caunter has been intercepted, nearly perpendicular, impregnated with lead—a pretty kindly thing. On this the south cross-cut is turned, inclining south-east (which I much approve of), and on its course to bear down on the great south lode 10 or 12 fathoms ahead.

Let no adventurer in South Maria be discouraged until this lode is cut; in this, beyond all the other lodes, my hopes of success are concentrated. This is the master lode of the six underlaying towards the four lodes north of it, has been opened on the back full 300 fms., and in every pit is a strong orey lode, from 5 to 7 ft. wide, with rich gossan. In the adit level a strong bunch of orey work was taken from it, improving in going down, up close to the last-named caunter going west; and, as the cross-cut is coming on the course of this caunter, the great south lode will be intersected at the very point where it was cut so good in the adit level, and where, at 30 fms. deep in this level, I think one might venture a large stake, that a good course of ore will be found; when cut, by all means drive on its course east and west; east towards the Great Maria sett, I think you will in the vale find the richest course of ore, as this lode was cut rich in the bed of the river dividing the two Marias when fixing the dam. By driving west, the great cross-course will be seen, which by the rocks of lead taken from the shallow cutting, this lode indicates richness for lead. If only one lode is to be driven on at present, decidedly I should say, confine your operations to the south lode, as the most large and promising one in the sett yet discovered. Some of the adventurers may think they have done enough to prove the mine—permit me to tell them they have but just begun, as I find that their outlay is below 3000*l.*, including the expense of buildings, machinery, &c.: and if twice that sum had been expended in the same time, I believe the results would be, good work, and a paying mine in a deeper (say 45 fm.) level. An additional force should be applied this summer, as I know but another untried spot more worthy of a trial, or likely to make a mine, if fairly tried, than South Maria. AN UNDERGROUND MINER FOR 30 YEARS.

Tavistock, May 1.

SILVER AND LEAD MINES IN SWITZERLAND.

SIR,—An advertisement having appeared in your Journal of the 22d of April last, relative to the silver-lead mines in the valley of Loetschen, Canton Valais, Switzerland, emanating from the office of the Royal British and Foreign Mining Offices, 140, Strand, I beg to inform you, that I have not sold one-fifth, or any other portion, to any one in connection with the said office.

London, May 5. BOYET RICHARD.

WEST WHEAL JEWEL MINING COMPANY.

SIR,—For the last eight years, a letter has regularly appeared in your Journal, about a week before the annual meeting, from a correspondent at Redruth, under the signature of "Argus," "A Looker On," and, lastly, in the *doubtful* character of "A Shareholder," recommending the adventurers to do away with the London management, and to centre all the power in a Cornish committee. Now, Sir, when I reflect upon the numerous instances of extravagance and irregularity which have occurred, during the last few years, under the exclusive management of committees in Cornwall—and I need only allude to the following as an illustration of my argument—namely: Hallenbeagle, Ting Tang, East Pool, Trewavas, Providence, Tryphena, and many other mines—where, owing to embezzlements in some, keeping back liabilities in others, and extravagance in the rest, the adventurers are placed in such a position as not to be aware of the extent of their liabilities, or whether they may not ultimately be involved in a suit in Chancery—when these facts are borne in mind I do think it will be conceded, that the small expense of a London direction bears no proportion to the increased security thereby afforded to the adventurers.

I may observe, in conclusion, that I wish to make no reflection whatever on the West Wheal Jewel committee, who, I have reason to believe, conduct the affairs of the association with a desire to benefit the shareholders generally.

May 4. A LONDON ADVENTURER.

ST. JOHN DEL REY MINING COMPANY.

SIR,—I have some shares in the St. John del Rey Company, and see with regret that its management has been the subject of controversy and animadversion in your columns. Knowing nothing of mining, practically or theoretically, I will not pretend to give an opinion upon points I do not understand; but I quite agree with the "Shareholder" who, in your last Number, urges the propriety of naming, at the next annual meeting, at least one auditor, totally unconnected with the directors; for I confess, that the accounts and statements put forth by the board are quite beyond my comprehension. The dividends we receive are much smaller than the monthly reports from the mines and the statements of the board would lead one to expect. I see, in the annual report of last year, that after payment of the dividend declared in June, 1847, there was left to the—

Credit of profit and loss	£5497	0	0		
By statement dated Dec. 10, the profit for six months was	9979	0	0	£15476	0 0
Less dividend, payable 20th June, 1848				5500	0 0
To credit of profit and loss, after payment of last dividend				£9976	0 0
The superintendent's report for 1847 (published in your Journal of the 15th April) states, that 1847 gave 45 per cent., and its last six months 75 per cent. more than 1846—75 per cent. on 5500*l.* (the profit of second half-year of 1846) gives				9625	0 0
Or				£19,601	0 0

out of which to pay half-yearly dividend next month. I have taken these figures from the documents published by the board; and, as they show sufficient funds in hand to divide 30s. per share, and leave a handsome surplus, the shareholders have a right to expect this rate of profit. If the directors propose a smaller dividend, the proprietors should insist upon an examination into the monetary affairs of the concern.—B. B. F.: *Bishopsgate-street, May 3.*

THE COST-BOOK SYSTEM.—COURT OF CHANCERY, MAY 5.

CURLING *v.* FLIGHT.—This was an appeal from the Vice-Chancellor Wigram. The plaintiff, as the executor of D. Curling, put up for sale by auction certain mining shares and interests in mines, the property of his testator. These were one half-share in the Tresavean Mine, in Cornwall; two shares in the Wheal Jewel Copper Mine, in the same county; three fourth-parts of a share in the East Wheal Crofty Mine; one share in Botallack Tin and Copper Mine, near the Land's End; two shares in the Goginan Lead Mine, near Aberystwith; and five shares in Stray Park and Camborne Vean Copper Mines. The sale was under the usual conditions, and the defendant became a purchaser of the lots, signed the memorandum, and paid the deposit of 300*l.*—the purchase money being 1509*l.* When the defendant was called on to complete his purchase, he demanded "an abstract of the deeds, or constitution, in each case of the mine, or company, and of the title to, or interest in, the mine itself"—in fact, the ordinary title to the share of an estate. The plaintiff declined to furnish such abstract, as unusual, and insisted that he was only bound to show, by the certificate of the pursers of the respective mines, that his (testator's) name was duly registered in the respective cost-books as the owner of such shares. The defendant persisted in his refusal to take such a title, and the bill was then filed for a specific performance, and the usual reference was made to the master, as to whether a good title had been shown to the lots in question. The Master reported the nature of the demand made by the defendant for the production of such a title as is usually given in the sale and transfer of other hereditaments; but stated it to be his opinion, that the certificates and documents produced fully showed that a good title could be made to each of the lots in question.—The defendant excepted to this report, and the Vice-Chancellor allowed the exceptions, holding that the plaintiff was bound to show the title of the testator and his co-adventurers in the mine itself; and observing that, as the vendor had agreed to sell all interest in the mines themselves, that was more than a mere interest in the money, and all the title that had been shown was a right to receive a certain portion of the annual profits.

Mr. WOOD and Mr. TELLOTSON, for the appellant, contended that all the plaintiff covenanted to sell was an interest in an existing partnership, and that they were not bound to show more than the existence of that interest. The defendant knew that mining shares were always sold with such a title, for he had frequently dealt in them; and the auctioneer, Mr. Warton, proved that, for 30 years, in his extensive business, he had always sold mining shares with the title to be proved by the appearance of the name of the vender in the cost-books. They relied on the case of Tredwin *v.* Bourne, in 6 Meeson and Welsby; and cited Bligh *v.* Brent, 2 Young and Call; Foster *v.* Hale, 5 Vesey; March *v.* the Attorney-General, 5 Beacl, and several other cases.

The SOLICITOR-GENERAL and Mr. ROGERS, on the other side, argued that the plaintiff had not even proved the partnership on which he relied. They had not shown who were the parties who were to pay the profits they professed to sell. The Vice-Chancellor said to them, "show me the interest that you have, and then I can tell if it is sufficient;" but that they could not do. The case for the defendant was, that mining shares were an interest in land, within the meaning of the Statute of Frauds, and they relied on the authority of Sir Edward Sugden, who had so decided in "Boyce *v.* Green," reported by Mr. Batty. They sold, not merely the dividends, but the thing producing the dividends, and to that thing they must show a proper title.

The arguments were not concluded when the Court rose, but his Lordship intimated an opinion that he should probably send the matter back to the master, to give the parties an opportunity of trying to improve their title.

LISKEARD DUCHY CONSOLS.—At a meeting of adventurers, held at Liskeard on the 18th of April, it was determined that the mine should be abandoned, the materials sold, and the accounts wound up and settled. The purser was instructed to take legal steps to recover any calls that might be due.

NORTH POOL.—The usual two-monthly meeting was held at the mine, on Monday last, when the accounts for January and February, of which the following is an abstract, were submitted and passed, and a dividend of 15*l.* per share declared:—By balance at the end of December, 519*l.* 17s. 6d.; ores sold (less dues), 8490*l.* 12s. 5d.; allowance on castings, 2*l.* 11s. 9d.=4013*l.* 1s. 8d. —To costs, &c., 1952*l.* 13s. 9d.; dividend of 15*l.* per share, 1500*l.*=3452*l.* 13s. 9d. —leaving balance in purser's hands of 560*l.* 7s. 11d.

NEW PATENTS.

I. Davies, Birmingham, engineer, for improvements in steam-engines and locomotive carriages, parts of which are also applicable to other motive machinery.

A. S. Stocker, York-place, City-road, for certain improvements in time-teachers and boxes, show-cards, or holders for matches, pens, pins, needles, and other articles, and in the mode or modes of manufacturing the same.

F. R. Selligue, Boulevart, Beaumarchais, Paris, widow, for improvements in propelling, and the machinery employed therein. (Being a communication from her late husband.)

H. W. Schwartz, of great St. Helen's, London, merchant, for improvements in steam-engines. (Being a communication.)

W. J. Normanville, gent., Park Village, Middlesex, for certain improvements in railway or other carriages, partly consisting of new modes of constructing the axle-boxes and journals of wheels, also an improved method of lubricating the said journals or other portions of machinery, by the introduction of aqueous, alkaline, oleaginous, or saponaceous solutions.—*Mechanics' Magazine.*

THE ELECTRIC LIGHT.—On Thursday night, we had an opportunity of witnessing another exhibition of Mr. Staite's electric light, at the Bazaar, Baker-street. Certainly, the light produced was most splendid, both as to quantity and quality. Although the light itself was no larger than about the size of a common pea, we could distinctly read small print (similar to the type in which this is printed), at the further end of the coach gallery—a distance of about 130 ft. from the light. Coloured objects, such as flowers, ribbons, &c., appeared as distinct as they would by light of day; even the yellows were as distinct as if viewed by the light of the sun.—*Mechanics' Magazine.*

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 9 per Cent., 191 89		Belgian, 2½ per Cent., 36¾	
3 per Cent. Reduced Ann., 81⅝ ¼		Dutch, 2½ per Cent., 43¾ 2½	
3 per Cent. Consols Ann., 83¾ 3½		Brazilian, 5 per Cent., 69	
3½ per Cent. Ann., 89¾ ⅞		Chilian, 6 per Cent., 80 1	
Long Annuities, 8¾		Mexican 5 per Cent., 36 ½	
India Stock, 10½ per Cent., 229		Russian, 5 per Cent., 86	
3 per Cent. Consols for Acc., 83 3½		Spanish, 5 per Cent, 12⅝ 13	
Exchequer Bills, 1000*l.* 2½d. & 3d. 41 39pm		Ditto 3 per Cent., 23	

MINES.—The business transacted during the week has been limited, and the shares confined to a few mines. There has been an inquiry for Devon Great Consols at an advanced price: the negociattons referred to in our last respecting them having resulted in the sale of several, and the demand appears to be on the increase.

Herodsfoots have been sought for, but sellers are few, and have advanced their quotations; the prospects of the mine are represented as highly encouraging. Carwinning Hills have been in request during the week, and several transactions have taken place; but buyers do not appear to be on the increase, nor do they maintain their quotations. The reports from the mine are of a progressing and satisfactory character.

South Wheal Francis bi-monthly account meeting, held on the 2nd inst., gave a dividend of 8*l.* per share, leaving a balance of 663*l.* 12s. 7d. in hand.

Shares in the following mines have changed hands this week:—Devon Great Consols, Carwinning Hills, East Tamar, Tin Vale, South Trelawny, Trehane, Pennant, Herodsfoot, Andrew and Nangiles, Mary Ann, &c.

The annual meeting of the Devon Great Consols Mining Company was held at their offices on Monday, 1st inst. The statement of accounts presented, of the receipts and expenditure for the year ending Dec., 1847, showed the amount received for copper ores (14,413 tons) to be (inclusive of carriage) 101,916*l.*; the costs, from June to Dec., amounted to 57,084*l.*; and after payment of other current charges—including 7628*l.* to timber, three dividends to the amount of 15,360*l.*, dues paid during the year, of 7881*l.*, and the costs for January, 1848, of 3957*l.*—leaves a balance in hand of 14,033*l.*, with the ore bills coming due, for Jan. and Feb., amounting to upwards of 17,704*l.* The directors' report, inserted elsewhere, presents a most gratifying position of the prospects of the mine. The manager's report is a most detailed and elaborate, and, at the same time, perspicuous and intelligent, document. We regret its length (containing as it does an interesting tabular statement of operations, one of general information as well as importance to the adventurers,) precludes our giving it a place in our columns; for, if divested of the tabular account furnished, a large proportion of its interest would be obscured, as frequent reference is made to it. We understand the same will be published in the form of a pamphlet, for the information of distant shareholders. The balance-sheet shows a balance of assets over liabilities, of 49,264*l.*

Some attention has lately been directed to the important discovery of a quantity of excellent coal on the mainland of Borneo. We regard this as a valuable consideration to the steam navigation of the Asiatic seas, as to the mining interests of the island, as it will, no doubt, afford the means of smelting the ores, when the Eastern Archipelago Company have sufficiently matured their operations. This company appears to have very favourable prospects.

In the foreign mines there have been several transactions, and St. John del Reys have been eagerly sought for; these, with Kinzigthals, United Mexicans, Australians, and Bolanos, may be considered the principal mines.

The following is the arrival of specie since our last:—At Southampton, on Saturday, the Peninsular and Oriental Steam Navigation Company's ship, *Hindostan*, with valuable freight, consisting of 75 packages of dollars, gold coin, and other specie, valued at 41,803*l.* The *Hibernia*, at Liverpool, from New York, on Wednesday, with 94,000*l.* in specie.

HULL, THURSDAY.—Business in the share market is still limited; but yesterday and to-day a much better feeling has manifested itself—attributable chiefly to the advance in Consols, the subsidence of popular commotion, and last, not least, to the very fine weather. The weather, as affecting the forthcoming harvest, will begin, by-and-bye, to form the most important element in share calculations; for, we think, there never was a time when more turned on the result of a good or bad harvest.

Mr. R. Allan, of Edinburgh, in his Share Circular, thus alludes to the transactions of the past month:—"Railway property reached its lowest quoted value between the 10th and 15th of April. The Scotch share market never was so depressed as at that time. It has since improved, with some indications of firmness. Already a decided advance has occurred in the value of Edinburgh and Glasgow shares, which have risen 10*l.*, and are now quoted at 85*l.* Caledonians, also, have risen from 25*l.* to 29*l.* 10s., and there is more inquiry for Scotch railway shares generally. The operations in our local market of late have been almost exclusively confined to North British shares, particularly thirds and quarters. The quarter-shares at 95s., on 6¼ paid, are so much cheaper than the original stock at 21, that many holders here have latterly sold the latter to buy the former; and, should any arrangement be made to allow interest on the thirds, these shares, at 17s. or 18s., for 60s. paid, must improve also. The Eastern Bank, at its meeting on the 19th of April, declared a 6 per cent. dividend, and added 4500*l.* to the surplus fund, which now amounts to 15,000*l.* The affairs of the British Exchange Company have been wound-up, and a return of 3s. 2½d. on the 5s. deposit is payable on the 2d proximo."

RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lgth. Rway.	Present actual cost.	Price per share	Last Div.	Traffic Returns. 1848	1847
Birkenhead, Lancashire, & Chesh.	15	997,284	37	5 *p.c.*	878	703
Caledonian	130½	3,594.470	31	—	3675	—
Dublin and Drogheda	35	754,529	52	—	800	895
Dublin and Kingstown	7	473,282	—	7	1902	1840
Dundee, Perth, & Aberdeen Junc.	47	415,073	26½	8	826	311
East Anglian (Lynn to Ely)	55½	1,062,742	6¼	—	484	—
East Lancashire	24	1,733,915	18¾	—	1118	—
Eastern Counties	221¾	8,259,709	14½	4	13162	10151
Eastern Union	51½	979,926	20	—	1021	953
Edinburgh and Glasgow	53	2,375,745	43	6	3422	3666
Edinburgh and Northern	29	953,207	14½	—	1445	—
Glasgow, Paisley, and Ayr	64½	2,097,321	70	7	1903	2253
Glasgow, Paisley, & Greenock	23	845,554	15	4	992	1099
Gt. Southern & Western, Ireland	110½	1,876,326	23½	—	2760	1589
Great Western	281½	10,970,636	93	7	19228	19287
Kendal and Windermere	10½	169,888	23	—	153	—
Lancaster and Carlisle	70	1,395,193	43	4	1790	1128
Lancashire and Yorkshire	124¾	7,597,618	86	7	9161	8583
London and North Western	428	21,513,354	131¼	8	41927	43075
London and Blackwall	4	1,241,061	5½	1½	507	326
London, Brighton, & South Coast	161½	6,087,822	39⅝	4	6707	6805
London and South-Western	189	6,264,164	46	8	9321	7474
Londonderry and Enniskillen	14½	145,135	16	—	187	—
Manchester, Sheffield, & Lincolnsh.	46	2,336,624	80	5	2396	1894
Maryport and Carlisle	28	440,851	40	3	481	554
Midland Company	402½	9,853,122	101¼	7	20415	19501
Midland Great Western (Irish)	36½	583,776	10⅛	—	942	—
Newcastle and Carlisle	66½	1,184,080	103	6	2168	610
Norfolk	81⅝	1,624,150	65	5	1859	1634
North British	78	2,800,748	23½	5	2009	1683
Shrewsbury and Chester	17	780,272	15¼	7½	797	403
South Devon	29	1,609,071	20	5	—	542
South-Eastern	165½	6,932,181	23⅛	6½	8874	7321
Taff Vale	38	820,056	—	8	1407	1584
Ulster	36	646,211	52	6	975	1000
Whitehaven Junction	12	147,095	—	6	188	198
York, Newcastle, & Berwick	242½	4,466,526	32	9	10598	8482
York and North Midland	230½	3,799,297	67½	10	7803	5931
FOREIGN RAILWAYS						
Amiens and Boulogne	68½	573,338	6½	4	1147	—
Antwerp to Ghent (monthly)	31	——	—	—	979	911
Belgian ditto	—	——	—	—	—	—
Dutch Rhenish	57½	——	⅜	—	—	—
Northern of France	211	2,000,000	3⅛	4	9553	9974
Orleans to Bourges (Central)	107½	——	—	—	1903	—
Orleans to Tours	72	600,000	32½	4	2034	3100
Paris and Orleans	82	2,011,720	22	12½	6148	7950
Paris and Rouen	85	2,082,916	15½	11⅛	—	8357
Rouen and Havre	59½	——	8	4	—	2586
Strasburgh and Basle (monthly)	88	——	6	1½	5392	6168
West Flanders (ditto)	—	——	⅝	—	988	—

Total earnings for last week, £177,303, being an increase of £17,013 over last year.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Carr's Hartley 15—Chester Main 14 6—Davison's West Hartley 15—Original Tanfield 11 6—Pontop Windsor 12 6—Tanfield Moor 13 6—Wylam 13 9—Lambton Primrose 15 0—Anthracite Culm 16 6—Derwentwater Hartley 14 6—Llangennech 23 6—Wall's End Bewicke and Co. 15—Killingworth 15—Washington 14 9—Belmont 15 9—Haswell 17 6—Hetton 17 3—Lambton 16 6—Leasingthorne 15 6—Shotton 16—Whitwell 14 3—Caradoc 16—Cassop 15 6—Hudson's Hartlepool 16—Heugh Hall 15—Brown's Deanery 15 3—Seymour Tees 15 9—Tees 17.—Framwellgate 15—Ships at market, 70.; sold 51.

WEDNESDAY.—Carr's Hartley 15—Chester Main 14 6—Davison's West Hartley 15—Killingworth 14 6—Riddell's 14 6—Washington 14 3—Eden Main 15 9—Lambton Primrose 15 9—Belmont 15 9—Bell 15 6—Haswell 17 6—Hetton 17 3—Lambton 16 6—Morrison 14 9—Shotton 16—Stewart's 17 3—Caradoc 16 3—Hartlepool 15 9—Adelaide Tees 16 6—Denison 15 9—South Durham 14 9—Tees 17—Anthracite Culm 16 6—Cowpen Hartley 15—Sidney's Hartley 15—Ships at market, 116.

FRIDAY.—Carr's Hartley 15—Original Tanfield 11—Tanfield Moor 13 6—Wall's End Washington 14 9—Lambton's Primrose 15 9—Bell 15 9—Hetton 17 3—Tees 17—Cowpen Hartley 15—Derwentwater Hartley 15.—Ships at market, 34; sold, 25; unsold, 6.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	7	—
512	Albert Consols	1	2½
1024	Alfred Consols	4½	14
235	Andrew and Nangiles	28½	10
1000	Antimony and Silver-Lead Mining & Smelting	5	5
1624	Balleswidden	9	18
128	Balnoon Consols	25	25
10000	Banwen Iron Co.	2	—
1000	Barristown	4½	3
4000	Bedford	2½	3
128	Besore Lead Mine	14	10
1944	Birch Tor Tin Mine	9½	2
8000	Blaenavon	50	23
100	Botallack	175	80
120	Brewer	5	7
10000	British Iron, New, regis.	10	13
—	Ditto ditto, scrip	10	10
128	Budnick Consols	52½	30
128	Burthy	20	21
128	Callestock	17	30
1000	Callington	19	25
20000	Cameron's Steam Coal	6	5½–6
256	Caradon Copper Mine	9½	2
256	Caradon Mines	22½	17
256	Caradon United	24	5
256	Caradon Wh. Hooper	21	14
1000	Carn Brea	15	90
3000	Carthew Consols	1½	6
2048	Cascade	1	2
112	Charlestown	220	30
166	Cleveland	9	5
512	Coatlithe Hill	½	1–½
1900	Combmartin	7½	3
500	Comblawn	5½	6
128	Comfort	45	90
256	Condurrow	20	30
2560	Cook's Kitchen	14	2
1000	Coombe Valley Quarry	2½	3½
6500	Cornish Mining Co.	2	2½–½
1000	Copper Bottom	1½	6½
1024	Cosheen	4½	20
240	Craddock Moor	16½	15
128	Creeg Braws	120	100
500	Cubert Mine	12½	10
1000	Cwm Erfin	3	3½
300	D.Prior & Buckfastleigh	14	26
7100	Derwent	8½	5
1024	Devon & Courtenay Con.	7½	1½–2
1024	Devon Great Consols	1	210
1000	Dhurode	2	5
186	Dolcoath	30	40
2560	Drake Walls	4	4
10000	Durham County Coal	45	9
3000	Dyfngwm	10	12½
256	East Alvenney	10	25
112	East Caradon	47	47
2048	East Crowndale	5½	4½
512	East Combe Silver-Lead	6½	6½
128	East Pool	5	15
128	East Relistian	22	40
9000	East Tamar Consols	6	1
—	East Wheal Albert	1	3
94	East Wheal Crofty	125	280
1024	East Wheal Fortune	2	3
1024	East Wheal Friendship	3	3½
128	East Wheal Rose	50	900
2048	East Wh. Rough Tor	¼	2
—	East of Scotland Iron Co.	2½	1½
123	East Wheal Seton	14	10
256	Elborough	1½	2
256	Exmoor Wh. Eliza	3½	6
512	Fowey Consols	40	45
6400	Gadair	2	2
20000	Galvanised Iron Co.	10	9½
4000	Gen. Mining Co. for Irel.	1½	1½
2048	Georgia Tin Mines	1½	1½
256	Gonamena	32½	30
128	Goonvrea	4	1½
244½	Grambler & St. Aubyn	—	10
100	Great Consols	1000	400
256	Great Callestick Moors	22	25
2560	Great Michell Consols	1½	3½
256	Great Resugga Moor	11	5
512	Gt. Wh. Rough Tor Con.	15½	18
100	Grogwinion	5	—
256	Gwinear Consols	7	6
6000	Heigneton Down Con.	½	2½
256	Herodscombe	5½	4½
256	Herodsfoot	18	23
10000	Hibernian	12½	1½
239	Hobb's Hill	6	3
1000	Holmbush	19	9
827	Kirkcudbrightshire	5½	5
2048	Lamberooe Wh. Maria	11	4
128	Lelant Consols	90	60
160	Levant	—	90
1000	Lewis	15	6½
1000	Llwyn Malees	5	—
3600	Llynvi Iron	50	50
256	Lostwithiel Consols	15	15
6000	Marke Valley	10	2½
5000	Mendip Hills	2½	1
5000	Merionethshire Slate & Slate Slab Co.	1½	2
20000	Mining Co. of Ireland	7	5½
256	New East Crowndale	3½	3½
128	North Fowey Consols	37	34
100	North Pool	45	450
140	North Roskear	5½	130
256	North Wh. Abraham	1	1
262	North Wh. Leisure	1½	2
128	North Wh. Providence	2½	3
15000	Northern Coal Co.	23	2
128	Par Consols	—	1000
4000	Pennant	1½	2
100	Penrhiw	30	65
1280	Perran St. George Un.	13	20
128	Perran Wh. Virgin	9½	10
512	Plymouth Wh. Yeoland	6½	23
256	Polsaith Consols	4½	7
112	Providence Mines	35	45
10000	Rhymney Iron	50	20
10000	Ditto New	7	6½
2500	Rhoswhiddol Mine	—	10
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12
—	Shotts Iron Company	50	50
1100	South Dolcoath	3	2½
128	South Caradon	10	450
256	Sth. Friendsh. Wh. Ann	16	25

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price.
300	South Harvannah	10	25
—	South Molton	5	10
256	South Tolgus	7½	42
256	South Treiawney	20	9
128	South Yeoland	16½	20
128	South Wheal Basset	110	70
256	South Wh. Betsey	2½	12½
124	South Wh. Francis	160	220
256	South Wh. Hope	—	5
1000	South Wh. Maria	2½	2
256	South Wh. Sophia	4	4½
10000	Southern & Western, Irish	2	4
280	Spearne Moor	30	40
256	St. Austell Consols	9	6
94	St. Ives Consols	—	320
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	43	17
9600	Tamar Consols	3	4½
1024	Tavy Consols	4	9
6000	Tincroft	7	4
1000	Tin Vale	2	—
128	Tokenbury	147½	10
256	Trehane	2	26
5000	Treleigh Consols	6	3
2000	Tremance	2	50
96	Tresavean	10	210
120	Trethellan	5	16
120	Treviskey and Barrier	130	125
258	Trevean	1½	25
128	Trewellard	12	26½
100	United Mines	300	350
256	Wellington Mines	15	25
128	West Basset	45	25
256	West Caradon	20	100
128	West Cargoll	2	12
512	West Fowey Consols	40	15
256	West Providence	9	25
200	West Seton	40	160
—	West of Scotland Iron Co.	210	210
120	West Trethellan	5	30
256	West United Hills	—	5–8
512	West Wheal Francis	1½	5
256	West Wh. Friendship	9	11
3845	West Wheal Jewel	11	1½
2560	West Wh. Maria	3	1
256	West Wheal Shepherd	5	2½
256	West Wheal Tolgus	21½	7
256	West Wheal Treasury	19	12–14
5200	Wicklow Copper	5	10⅝
184	Wheal Adams	51	10
1000	Wheal Agar	—	10
256	Wheal Albert	10	8
128	Wheal Acland	13	2
256	Wheal Allen	2	5
240	Wheal Anderton	21	20
128	Wheal Ann	—	50½
512	Wheal Ann, Bridford	1	2
512	Wheal Anna Maria	4½	5½
1024	Wheal Ash	4½	8
120	Wheal Bal	5½	20
2560	Wheal Barbara	1½	4–5
256	Wheal Benny	10½	6
256	Wheal Biencowe	21	5
256	Wheal Bucketts	20	5
256	Wheal Calstock	5	6
136	Wheal Clifford	190	190
1024	Wheal Coad	½	5
128	Wheal Courtenay	—	20
6000	Wheal Curtis	3	3½
256	Wheal Dyke	12	13
256	Wheal Fortescue	6½	5
2048	Wheal Frederick	2	2
388	Wheal Franco	27	30
128	Wheal Harriet	45	50
256	Wheal Jane	21	15
—	Wheal Lawrence	—	3½
256	Wheal Louisa	8½	8
112	Wheal Margaret	79	350
512	Wheal Mary Ann	5	16
256	Wheal Mary Consols	40	26
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	15
2048	Wheal Samson	½	20
99	Wheal Seton	214	900
256	Wheal Sisters	30½	17
256	Wheal Sophia	5½	10
128	Wheal Spearne	10	75
128	Wheal St. Ann	9	15
—	Wheal Trescoll	1	12½
260	Wheal Trelawney	73	90
256	Wh. Tremaine (St. Ervan)	4½	20
256	Wheal Tremayne	35	15
128	Wheal Trew	20	21
256	Wheal Trevenna	3	4
92	Wheal Tryphena	140	265
242	Wheal Venland	29½	30
256	Wheal Vlow (Perranz.)	½	⅝
184	Wheal Vyvyan	—	60
256	Wheal Williams	6	14

FOREIGN MINES.

5000	Alten Mining Company	14½	2½
15000	Asturian Mining Co.	12	3–3½
20000	Australian	2½	3½
10000	Anglo-Mexican Co.	100	2
12374	Ditto Subscription	25	2½
6000	Barossa Range	½	2
3000	Bolanos	150	2½
2000	Ditto Scrip	15	3
12000	Brazilian Imperial	23	5½
10000	Cobre Copper Co.	40	18
8500	Colombian Co. regis.	55	1
5000	Ditto Scrip	5½	
5000	Copiapo Mining Co.	14	2½
10000	General Mining Ass'n.	20	14–16
5000	Kinzigthal Mining Ass.	2	4½
20051	Mexican Company	59	—
2000	Mexican & South Amer.	7	1½
5000	Mocaubas & Cocaes	30	4
29320	Rl. del Monte, regis.	28½	1½
	Ditto unregistered		
	Ditto Red Debentures	—	10
	Ditto Black ditto	—	5½
	Ditto Loan Notes	150	60
7000	Royal Santiago	10	6
2000	Pachuca Mines	4	4½
11000	St. John del Rey	15	7½
43174	United Mexican	Av. 28½	1⅞–2½

LATEST CURRENT PRICES OF METALS.

LONDON, MAY 5, 1848.

	£ s.	£ s. d.
Iron—Bar *a*..Wales..*ton*	6 5—	6 10 0
,, ..London ..	7 5—	7 10 0
Nail rods ,, ...	0 0—	8 0 0
Hoop (Staf.) ,, ...	9 10—	10 0 0
Sheet ,, ,, ...	10 10—	11 0 0
Bars ,, ,, ...	9 0—	9 10 0
Welsh cold-blast foundry pig	3 10—	4 5 0
Scotch pig *b*, Clyde	0 0—	2 2 0
Rails, average	0 0—	7 5 0
Chairs	0 0 -	4 4 0
Russian, CCND *c*..	0 0—	17 0 0
,, PSI	0 0—	——
,, Gouriefl	0 0—	——
,, Archangel	0 0—13	0 0
Swedish *d*, on the spot	0 0—11	10 0
,, Steel, fagt.	0 0—16	0 0
,, ,, kegs *e*	0 0—13	10 0
Copper—Tile *f*	0 0—87	10 0
Tough cake	0 0—88	10 0
Best selected	0 0..91	10 0
Ordin. sheets, *lb*...	0 0—	0 0 10

	£ s.	£ s. d.
Copper—Ord. bottoms ..	0 0—	0 0 11
Yellow Metal Sheathing	0 0—	0 0 8½
Tin—Com. blocks *g*..*cwt.*	0 0—	3 17 0
,, bars	0 0—	3 18 0
Refined	0 0—	4 1 0
Straits *h*	3 16—	3 17 0
Banca	0 0—	4 4 0
Tin-Plates—Ch., IC *i*, *box*	1 7—	1 9 0
,, IX ...	1 13—	1 15 0
Coke, IC	1 4 -	1 5 0
,, IX	1 10—	1 11 0
Lead—Sheet *k* .....*ton*	18 0—18	5 0
Pig, refined	18 5—18	10 0
,, common	16 10—17	5 0
,, Spanish, in bd.	0 0—17	0 0
Red.....	0 0—19	0 0
Dry White.....	0 0—23	0 0
Shot (Patent).....	0 0—20	0 0
Spelter—(Cake) *l* on spot	13 5—13	10 0
,, for arrival	13 0—13	10 0
Zinc—(Sheet) *m* export.	0 0—23	0 0
Quicksilver *n* .....*lb.*	0 0—	0 4 0

a Discount 2½ per cent. *b* Net cash. *c* Discount 2½ per cent. *d* Ditto 2½ per cent. in bond. *e* In kegs ½ and ¼-inch. *f* Discount 3 per cent. *g* Ditto 2½ per cent. *h* Net cash *i* Discount 3 per cent. *k* Ditto 2½ per cent. *l* Net cash. *m* Discount 1½ per cent. *n* Discount 1½ per cent.

[FROM OUR CORRESPONDENTS.]

GLASGOW PIG-IRON TRADE, MAY 4.—The demand for pig-iron has been very limited this week, and the consumption of it seems on the decrease—notwithstanding, there has been a slight advance in the price, owing to the article being firmly held at present. Some sales have been made at 43s., but holders are to-day asking 43s. 6d.—cash, for mixed Nos.

MONTHLY REPORTS.

Iron.—Owing to the continued depression of business, the price of Welsh and Staffordshire iron yielded, during the past month, the former fully 15s., and the latter 5s. to 10s. per ton. Scotch pig gave way 2s. per ton, but has recovered. The export demand is still very limited.

Copper and Yellow Metal Sheathing, Tin-Plates, Lead, Sheet-Zinc, and Quicksilver—Have been steady in price last month, with a moderate demand.

Tin.—English declined on the 27th April 2s., since when a few export orders have been executed: in Straits and Banca very little was done, and the prices are as yet unaltered.

The stock of Foreign, April 1, was		Tons 430
Imported 1st to 30th April		1—431 tons.
Cleared for consumption	ditto	4
Exported	ditto	12—16
Stock on hand 30th April		415 tons.

Spelter.—In consequence of the great decline in price, many parcels were sold for arrival, and on the spot, and we consider the market a shade better than on the 1st April, although the stock is increased from 1720 tons to 2400 tons.

Since our last month's report, the metal market scarcely presents a change requiring remark, excepting that English tin has declined 2s. per cwt., and that Scotch pig-iron is rather higher—there being buyers of mixed Nos. at 42s. 6d. per ton at Glasgow, whilst English bar-iron is to be had on easier terms, and we quote it full 10s. per ton cheaper than last month, for all sorts.

LEAD ORES.

Ticketings for about 45 tons (20 cwts.) Newtonards Lead Ore.

Douglas, Isle of Man, May 3, 1848.

Buyers.	*Offer per Ton.*
Sims, Willyams, Nevill, and Co.—Llanelly	£9 5 0
Walker, Parker, and Co.—Chester	9 1 6
Tamar Smelting Company—Devon	9 0 6
Newton, Keates, and Co.—Liverpool	8 8 6

Sold at Holywell.

Mines.	*Tons.*	*Price.*	*Purchasers.*
Pen-yr-henblas	50	£9 15 0	Walker, Parker, & Co.
ditto	48	9 13 6	J. P. Eyton.
Westminster	32½	8 17 6	Newton, Keates, & Co.
ditto	32½	8 17 6	Walker, Parker, & Co.
ditto	12	9 7 0	ditto
Jamaica	60	9 9 0	ditto
Belgrave	30	9 6 0	Newton, Keates, & Co.
Bwlchydaifryn	7½	8 19 0	Mather & Co.
Douglas	80	9 18 0	Walker, Parker, & Co.
Cairnsmore	41	8 16 0	Newton, Keates, & Co.
ditto	9½	7 5 0	ditto
ditto	9½	7 5 0	Walker, Parker, & Co.
ditto	6	5 2 6	Newton, Keates, & Co.
Total tons	418½		

Sold in London.

Bwlch Consols	37	£12 2 6	Newton, Keates, & Co.

Sold at Aberystwith.

East Logylas	70	£9 15 0	Walker, Parker, & Co.
ditto	65	9 15 0	ditto
Total tons	135.		

Sold at the Mine.

East Rose	100	£11 1 0	Tamar Company.
ditto	88	10 18 6	ditto.
ditto	55	11 9 6	ditto.
Total tons	243.		

Sold at Bagillt.

Ulster	53	£9 3 6	Walker, Parker, & Co.
Machynlleth	55	9 12 6	ditto
Total tons	108.		

BLACK TIN.

Mines.	*Tons.*	*Amount.*	*Purchasers.*
Charlestown	8½	£39 12 6	Calenick Co. and Williams.
ditto	2½	39 12 6	Daubuz.
St. Agnes Consols	4	35 0 0	Calenick Smelting Co.
Birch Tor	5	35 15 0	Ditto and Williams.
Great Polgooth	38	42 2 6	Ditto and ditto.
ditto	2	38 0 0	Ditto and ditto.

COPPER ORES.

Sampled April 19, and Sold at Tyack's Hotel, Camborne, May 4, 1848.

Mines.	*Tons.*	*Price*	*Mines.*	*Tons.*	*Price.*
North Roskear	134	£5 0 0	Tincroft	41	£2 1 6
ditto	120	4 18 6	ditto	40	7 11 0
ditto	99	5 14 6	ditto	37	2 17 0
ditto	95	3 17 0	ditto	27	6 14 0
ditto	92	6 1 6	Fowey Consols	80	4 1 0
ditto	88	4 6 0	ditto	76	5 6 0
ditto	84	6 4 0	ditto	73	6 7 6
ditto	79	3 10 0	ditto	68	2 6 0
ditto	60	8 0 6	ditto	55	7 7 6
ditto	56	5 5 6	Wh. Seton	108	4 5 0
ditto	50	1 4 0	ditto	101	4 6 6
Consolidated	98	5 10 0	ditto	93	5 6 0
ditto	94	5 11 0	South Wh. Francis	77	4 3 6
ditto	84	4 12 0	ditto	63	5 18 6
ditto	75	4 12 6	ditto	50	6 12 0
ditto	74	5 6 0	South Roskear	85	4 0 6
ditto	64	3 17 0	ditto	84	5 9 0
ditto	55	5 7 6	Wh. Bucketts	63	4 0 6
ditto	54	7 14 6	ditto	47	2 7 6
ditto	50	5 6 6	South Wh. Basset	39	8 7 0
ditto	29	3 19 0	ditto	29	8 6 0
Tincroft	76	3 10 0	Wh. Harriet	60	2 18 0
ditto	48	2 0 0	Wh. Vyvyan	16	4 16 6
ditto	47	4 2 0	ditto	7	1 2 6
ditto	46	2 4 0	ditto	1	35 0 0

TOTAL PRODUCE.

North Roskear	957	£4765	0 6	South Roskear	169	£799	18 6
Consolidated	677	3526	3 0	Wh. Bucketts	110	365	4 0
Tincroft	362	1329	6 6	South Wh. Basset	68	566	7 0
Fowey Consols	352	1754	4 0	Wh. Harriet	60	174	0 0
Wh. Seton	302	1388	14 6	Wh. Vyvyan	24	120	1 6
South Wh. Francis	190	1024	15 0				

Average Standard ..... £92 2 0 | Average Produce 8½

Average Price per ton £4 17 0

Quantity of Ore ..... 3271 tons. | Quantity of Fine Copper, 269 tons 7 cwts.

Amount of Money £15,813 14 6

LAST SALE.—Average Standard ..... £94 16 0.—Average Produce 7½

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	134	£670 0 0
Vivian and Sons	712	3413 7 6
Freeman and Co.	520	2749 5 6
P. Grenfell and Sons	555½	2432 5 6
Sims, Willyams, and Co.	668½	2978 13 6
Williams, Foster, and Co.	681	3570 2 6
Total tons	3271	£15,813 14 6

Copper ores for sale on Thursday next, at Andrew's Hotel, Redruth.—Mines and Parcels.—Carn Brea 842—Par Consols 407—Alfred Consols 295—Levant 234—Tywarnhayle 228—Wheal Prosper 215—West Wheal Treasury 131—Wheal Busy 58—Wheal Agar 52—North Wheal Basset 48—Botallack 35—Wh. Gurlyn 33—Cook's Kitchen 16.—2594 tons.

Copper ores for sale on Thursday week, at Pearce's Hotel, Truro.—Mines and Parcels.—Devon Great Consols, Wheal Josiah, Wheal Maria, Wheal Fanny, and Wheal Anna Maria 1412—West Caradon 338—Fowey Consols 240—Wheal Friendship 240—Poldice 218—Bedford United Mines 121—Wheal Jewel 86—Wheal Henry 54—Wheal Williams 47—Wheal Malden 31.—Total quantity of ore for sale, 2787 tons.

COPPER ORES

Sampled April 12, and Sold at Swansea, May 4, 1848.

Mines.	Tons.	Prod.	Price.	Mines.	Tons.	Prod.	Price.
Berehaven	116	9½	£6 1 0	Knockmahon	21	13½	£9 1 6
ditto	103	9½	6 1 0	Ballymurtagh	62	4½	2 6 6
ditto	102	9½	5 18 0	ditto	30	5½	3 11 0
ditto	93	9½	6 1 0	Kapunda	21	23½	16 1 0
ditto	92	9½	5 19 0	ditto	9	25½	17 15 0
ditto	91	9½	5 19 0	ditto	14	22½	16 2 6
Knockmahon	96	6	3 15 6	New Zealand	36	14½	8 10 0
ditto	92	9½	5 11 0	ditto	23	12½	7 1 0
ditto	83	8½	5 12 0	Princess Royal	14	26½	17 10 0
ditto	80	7	4 15 6	ditto	6	28	20 1 0
ditto	72	8½	5 8 0	New Zealand	12	8½	5 10 0
ditto	68	8½	5 13 6				

TOTAL PRODUCE.

Berehaven	597	£3578	5 0	New Zealand	59	£468	3 0
Knockmahon	512	2685	1 6	Princess Royal	20	365	6 0
Ballymurtagh	92	250	13 0	New Zealand	12	66	0 0
Kapunda	44	722	11 0				

Total tons, 1336.—Amount of money, £8135 19s. 6d.

Copper ores for sale May 18.—Cobre 115, ditto 105, ditto 96, ditto 91, ditto 70, ditto 60, ditto 102, ditto 93, ditto 71, ditto 59, ditto 58, ditto 51, ditto 50, ditto 19, ditto 80, ditto 76, ditto 71, ditto 57, ditto 110, ditto 106, ditto 18.—Cuba 106, ditto 91, ditto 87, ditto 83, ditto 72, ditto 67, ditto 115, ditto 92, ditto 89, ditto 65, ditto 28.—San Rafael 6.—Chili 50, ditto 45.—Berehaven 111, ditto 100, ditto 97.—Santiago 106, ditto 92, ditto 49, ditto 41.—Cronebane 37, ditto 8, ditto 1.—Tigrony 1.—Lackamore 31, ditto 6.—Yattagollinga 2.—Total quantity of ore to be sold, 3236 tons.

Boscawell Downs, St. Just.—William Eddy, jun., aged 15, was killed, by accidentally falling from the 100 to the 160 fm. level, whilst employed in rolling tinstuff from an inner part of the level to the shaft, for the purpose of being drawn to the surface.

Plymouth Works.—Two men were killed in one of the mine pits, at Mr. Hill's works, by a fall of mine; when taken up they were quite dead.

Merthyr.—A sad accident occurred to John Owen and another man, while working at the Abercannad Coal-Pit—a piece of coal fell upon them, killing Owen on the spot, and leaving the other in such a state that death is inevitable.

ANTIMONY AND SILVER-LEAD MINING AND SMELTING COMPANY.

1000 shares, of £5 each.

NOW AT WORK ON THE COST-BOOK PRINCIPLE.

Applications for shares to be made to Mr. R. Tripp, Fore-street, Exeter; Messrs. W. King and Co., Newcastle-upon-Tyne; and Mr. Bartlett, 58, Lombard-street, London.

LAND DRAINAGE.—Mr. W. HUGHES, Civil Engineer, begs to announce, that he undertakes the INSPECTION of ESTATES to be DRAINED, the SETTING OUT of DRAINS, the RECLAMATION of LAND, and the GENERAL SUPERINTENDENCE of WORK, at a FIXED CHARGE PER ACRE, according to the extent of land.—Full particulars may be had on application to Mr. W. Hughes, C.E., at the office of the *Mining Journal*, 26, Fleet-street, London.

TO PROPRIETORS OF STEAM-ENGINES, STEAM-BOAT COMPANIES, &c.—The SAVING of FUEL being at this moment an object of vast importance, M. REMOND, of 37, GREAT CHARLES-STREET, BIRMINGHAM, is ready to TREAT, on reasonable terms, with the OWNERS of STEAM-ENGINES for the application of his PATENTED IMPROVEMENTS, by which a great amount of fuel is economised, while, at the same time, more power is secured. The nature and extent of these improvements (which may be adapted at a comparatively small cost to any engine) were fully explained, and spoken of in the most favourable terms, in the *Midland Counties Herald* of the 30th of March—also in the *Mining Journal* of the 1st April—and they may be ascertained by a reference to Messrs. Beale, of Bradford-street, Birmingham, by whom they have been adopted with the most decided success.

AUDLEY, STAFFORDSHIRE—VALUABLE FREEHOLD PROPERTY.—TO BE SOLD, BY AUCTION, by Mr. HILLIARD, at the George Inn, in Burslem, in the County of Stafford, on Friday, the 26th day of May, 1848, at Five o'clock in the evening precisely, subject to conditions to be then and there produced—All that EXCELLENT FARM, comprising a messuage, or dwelling-house, barn, cow-house, and other outbuildings, gardens, two cottages, and 20 closes, fields, pieces or parcels of arable, meadow, and pasture land, containing together, by admeasurement, 80 acres and 4 perches, in statute measure or thereabouts (be the same more or less), and known by the name of the HOLLINWOOD ESTATE, situate, and being in, Talk-upon-the-Hill, in the parish of Audley, in the county of Stafford, and now in the occupation of Mr. William Baddeley, and his under-tenants.

Under this estate are valuable VEINS and BEDS OF COAL, capable of being worked, and got at a moderate expense; and from its vicinity to the Staffordshire Potteries, a ready sale for the coal may be anticipated. The turnpike road, leading from Newcastle to Congleton, intersects the estate at one point thereof. The buildings are in good condition, and the land is in an excellent state of cultivation.

The tenant will show the premises—and, for further particulars, application may be made to Mr. Mitcheson, of Longton, mining agent; Mr. Francis Cruso, solicitor, Leek; Messrs. Hacker and Bloore, solicitors, Leek; or to Mr. Vaudrey, solicitor, Congleton, with whom a plan of the estate is lodged for inspection.—Leek, 4th May, 1848.

NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—

To the Editor,
Mining Journal Office,
26, Fleet-street, London.

Also, to avoid trouble, Post-Office Orders should always be made payable to William Salmon Mansell, as acting for the proprietors.

We are compelled to postpone several of our leading articles, and other matters.

Erratum.—In our remarks on the expected improvement in the Bolanos Mine, *read* $30,000 to $50,000 per month, *instead of* $3000 to $5000.

"An Old Reader" (Leicester).—See Dr. Ure's *Dictionary of Arts, Manufactures, and Mines*—published by Longmans, Paternoster-row.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MAY 6, 1848.

The recommencement of the Great Dowlais Iron Works, under the covenants of a new lease to the old lessees, is an event upon which we have particular reasons for congratulating our friends in that district of the principality. We have, on more occasions than one, urged the propriety of those concessions, which were likely to result in the continuance of this important undertaking, by the same hands, and under the same auspices; and we are gratified to know that, at least, concurrently with those recommendations, the game has been played out to a successful issue. We think it will furnish far from an unfavourable opportunity, of trying the practicability of a more liberal and considerate treatment of the workmen who are to take so large a part in the carrying forward of these works, out of which so considerable an amount of property has, in a course of years, been realized. It is the chief social question of the day, both in the great mining theatres, and in the greater manufacturing seats of the kingdom, to ascertain whether it is not possible, without injury to the great proprietors, to raise the wages of labour, and, by that means, infuse into the labouring classes a sense of responsibility, founded upon the benefits they themselves receive, for the maintenance of public order, and the successful progress of the manual arts, which contribute so much to the strength, wealth, and comfort of our thronging population. We think it possible that, in this very case, the experiment may be wrought out successfully; that the operative classes among us, so far from being a source of fear and apprehension, may be so conciliated, as to form one of the chief securities for the peace and glory of this great empire.

In another column of our present Number we have given a report of the annual meeting of the Devon Great Consolidated Mining Company, and, at the same time, we have to express our inability to furnish the report of Mr. J. H. Hitchins, the manager of the mines. This document, which is elaborate in its preparation, gives a detailed, perspicuous, and graphic description of the operations for the past year, whilst it discloses to the adventurers a most pleasing and satisfactory perspective—a *data* for calculating large and continuous dividends for a long period yet to come.

It appears that the copper ore already discovered, or in sight, is estimated at the value of 313,000*l.*, without taking into calculation the levels being, and about to be, extended from the several shafts under courses of ore gone down, as well as the important discoveries recently made at Wheal Emma, a distance of nearly one mile east from Wheal Josiah, on the course of the lode; thus adding, in all probability, a wealthy auxiliary to already the richest mine in the United Kingdom. Nor should we omit the prospects presented at Frementor, which is about 800 fathoms south of Wheal Maria, and is expected to become as productive as the rest.

We should have felt pleasure, as we know it would prove gratifying to our readers, could we have afforded space to publish the report; but from the several lengthy statements in a tabular form to which frequent reference is made, we found it impracticable to abridge, without abstracting some interesting particulars. We understand the directors contemplate publishing the same in the form of a pamphlet, for the information of distant shareholders, when we may take further notice of it.

The fine front of order and loyalty, worn by the working population of the metropolis on the 10th of April, has suggested to a part of the nobility and gentry of England, having a lively interest in the preservation of order, and the maintenance of law in these realms, the propriety of commemorating the ex

and honourable rewards, must have their memory perpetuated beyond the lifetime of the laurelled individuals, or the transient circumstances which brought out and exhibited their virtues. The doctrine, indeed, pulls down every glorious statue from its pedestal, and shuts the doors of half our commemorative temples. No triumph whatever over the Charter, or the Chartists, is dreamt of, we are persuaded, by the proposers of these useful and well-merited foundations. All their advantages are as open, as patent to Chartists as to any other section of our burthened community; but it will be a melancholy day, indeed, for the social virtues of England, when we cannot dare to confer honours, or rewards, on the meritorious and the deserving, for fear of giving offence to terrorists and idlers. It is a part of the amelioration which society in the metropolis particularly requires, and we trust that the distinguished men, who have taken the initiative in so just and good a work, will not be scared from their beneficent purposes by those air-drawn daggers, and imaginary evils, which fill up the dream of the *Times*.

GOVERNMENT CONTRACTS FOR COAL AND IRON.—The following important Government contracts have been announced for the present month, on the part of the commissioners for executing the office of Lord High Admiral of the United Kingdom of Great Britain and Ireland:—*Coals for Singapore:* On Thursday, the 11th inst., they will be ready to treat with such persons as may be willing to contract for supplying and delivering into store, at Singapore, 500 tons of Welsh coals, fit for the service of her Majesty's steam-vessels.—*Welsh Coals for the Coast of Africa:* On Thursday, the 18th instant, the commissioners will be ready to treat with such persons as may be willing to contract for supplying and delivering into store, at the under-mentioned places, the following quantities of Welsh coals, fit for the service of her Majesty's steam-vessels: at Sierra Leone, 600 tons; Fernando Po, 1200 tons; Island of Ascension, 1200 tons; and St. Paul de Loando, 1000 tons.—On Thursday, the 11th inst., they will also be ready to treat with such persons as may be willing to contract for supplying her Majesty's dockyards at Woolwich, Chatham, and Portsmouth, with soft melting pig-iron. A distribution of the iron, and a form of the tender, as well as for the coal, may be seen and obtained at the Department of the Storekeeper General of the Navy, Somerset House.

CONTRACT OF COALS FOR INDIA.—The Finance and Home Committee of the East India House have announced that they will be ready, on Wednesday, the 17th inst., to treat with such persons, as may be willing to supply the company with 5000 tons of coal, of any of the under-mentioned sorts, to be delivered at Bombay—West Hartley, Carr's and Buddle's Hartley, Davison's West Hartley, Hartlepool, Stewart's Wall's End steam-coal, Glasgow hard splint coal (screened), Risca black vein coal (hand-picked). Tenders to be sent in on or before the said day, at 11 o'clock in the forenoon, after which hour none will be received.

COAL IN INDIA.—By the last overland mail, it appears that mining enterprise is on the dawn of developing itself. The establishing of railways throughout our vast Indian empire will not only make a great call for metal, but for fuel, and afford those facilities for the transit of mining produce to Calcutta, Bombay, and Madras, which have hitherto been the great drawback to adventurers embarking in so hazardous, or at least expensive, a speculation. Ore, of various descriptions, exists in many of the parts of Hindostan, particularly in the north-western district, where coal-fields abound, but have remained nearly untouched, from the want of a cheap means of conveyance, as what roads exist are either bad, or so far distant from the fields, that there is very little encouragement to enterprise, and that by water is very expensive, and only practicable at a certain portion of the year, by wretchedly constructed boats, at great risk. His Excellency the Governor-General, the Earl of Dalhousie, has already commenced making great improvements and reforms in the commercial intercourse between India and the adjoining vast archipelago, which will materially curtail the monopoly which has too long existed in the hands of the East India Company, particularly the importation of British manufactured salt, so repeatedly appealed against by the white salt proprietors of Nantwich, Droitwich, Chester, Gloucester, Worcestershire, and other mineral counties. A considerable quantity of coal is, by the last accounts, on its way from Malwa to Bombay by the River Narbudda. It can be obtained, at the pit's mouth, at less than 2s. per ton, and is expected to be delivered at Bombay at about 8s., and for less when a railway is established—this is the first attempt on a large scale; and no doubt will lead to an extensive trade for the supplying of the steam-vessels. His Excellency is giving great encouragement for the working of the mines and coal-basins of India, Borneo, &c.; and when the projected regular steam communication with Australia and New Zealand is completed, a wide field will be opened for mining enterprise in those colonies, which are known to be rich in minerals.

THE FOUNDRIES OF BELGIUM.—According to the Belgian papers, the districts of Liege and Charleroi, where many of the furnaces have been out of blast since the recent events in France, are beginning to improve. An extensive order for cannon and arms has been received from Egypt, on account of Ibrahim Pacha, who intends to strongly fortify St. Jean d'Acre and other ports, which has given a little animation to the forgemasters. At the large establishment of Seraing, the men are actively at work. Great depression, however, exists in the coal districts; it is shortly expected that business will be more cheering, not only for the colliery proprietors but the iron trade, which has been, for a long time, very much depressed, in consequence of the little speculation in railways, and general want of money and confidence to carry out the works commenced and projected.

EXPORTATIONS OF THE PRECIOUS METALS.—The exportations of the precious metals, during the last month, to the continent, and other parts of the globe, from this country, show that not only is our commerce abroad and our monetary state improving, but that confidence is once more regaining its healthy appearance. The dealing in the precious metals, as an article of trade, between England and other nations, is one of great importance, not only to our bankers and the bullionists, but particularly to those embarked in mining speculations in Mexico, and other parts of South America, as it is chiefly from this country that France, Belgium, Holland, and Hamburg, receive their supplies of bullion, gold, and silver. Considering the present unsettled aspect of affairs on the continent, the exportations in April were unusually extensive, which the following official recapitulation of the quantity entered at the Custom-house will show, besides which a large amount of specie and bullion is privately exported by the bankers and bullionists, which is not entered:—Gold bars to Hamburg, 538 ozs.; silver ditto, 75,705 ozs.; silver coin, 88,502 ozs.; gold coin to ditto, 4138 ozs.; Rotterdam—gold coin, 3147 ozs.; ditto specie, 2860 ozs., and 1300*l.*; bullion, 1400 ozs.; silver bars, 861,600 ozs.; ditto coin, 259,000 ozs., and 10,000*l.* Amsterdam—gold coin, 216 ozs.; ditto to Belgium, 6671 ozs., and 100*l.*; bullion, 514 ozs.; silver, 6000 ozs.; Boulogne, gold coin, 250 ozs.; Calais, 510 ozs. ditto; Havre-de-Grace, gold coin, 4010 ozs., and 95*l.*; ditto bullion, 2455 ozs., and 240*l.*; silver bars, 1120*l.* ozs.; New York, 1090 ozs. gold coin; ditto Mauritius, 500 ozs., and 10,000*l.*; Port Aledaide, 24 ozs. silver coin. Although the exportations have been very great, the importations from the United States of bullion and specie have been considerable. The *Hibernia* steamer brought 95,000*l.* in specie from New York; and, during the previous week, 70,000*l.* ($350,000) had been shipped to Liverpool by other packets. The *Washington* steamer will also bring over a large amount; the exports of specie to England, since January, had been $3,123,000 (624,600*l.*) The enormous profit in the shipment of gold to this country from Russia of upwards of 8½ per cent., has caused very large consignments to be made for this month—the navigation of the Neva being open; whilst last month the imports were confined to 120,000*l.*—a considerable portion of which was silver, sent by way of Hamburg and Ostend. The amount of gold and silver at the Bank of England is upwards of 17,000,000*l.*

ELECTRICITY OF MINERAL VEINS.—Last evening Mr. Robert Hunt, Keeper of Mining Records at the Museum of Economic Geology, whose interesting and enlightened researches into the various phenomena of the metallic formations of this country, have acquired for him so well-deserved a celebrity, gave a lecture "On the Electricity of Mineral Veins," at the Royal Institution, Albemarle-street—the theatre of which was crowded with a highly scientific and most fashionable auditory. The lecture (of which we shall give a report in our next) was warmly applauded.

BLAENAVON IRON AND COAL COMPANY.

The remarks made in our last Journal, respecting this company, having attracted the notice of many of the interested parties, who attended the meeting to which we alluded, and considered by some as unjust, we have pleasure in presenting our readers with the following official documents, as containing ample explanatory details of the position and prospects of the company. The meeting was convened by the following circular:—

"As the period is approaching when the annual general meeting of the proprietors of the Blaenavon Iron and Coal Company will take place, the directors are anxious, previous to such meeting, to call the careful attention of shareholders to the financial position of the company, and to ask for their co-operation in carrying out some practicable mode of extricating the company from its present embarrassment. The difficulties with which the company has had to contend from its commencement (arising from insufficiency of capital) have been frequently stated to the general meetings by the directors, and various means have, from time to time, been authorised by the shareholders for enabling the directors to issue shares, or to raise loans by debentures; yet, notwithstanding all the powers that have been vested in them, they have never been able, more than partially, to carry out the intentions of the shareholders. Their difficulties have of late been greatly aggravated by the state of the times, and the recent mercantile disasters. At such a period, the directors would gladly have abstained, had it been in their power, from calling upon the shareholders to provide funds to pay off the debentures; but as these are now rapidly falling due, and must be paid, it is right that the question should be seriously considered, and due provision made for the discharge of the company's engagements. It is of the utmost importance that every shareholder should clearly understand his obligation with respect to these debentures. The company being, in effect, a private partnership, each and every one of the shareholders, as a partner, is legally responsible for the payment of all the debts incurred by the company; moreover, these debts having been contracted with the knowledge and with the distinct sanction of the proprietors, there exists, in addition to all the legal responsibility, every moral obligation upon them to contribute their quota to raise the necessary funds, for the purpose of mutual protection. The directors have succeeded in so far deferring the periods of maturity of these debentures, as that, by a comparatively small annual payment per share, by every proprietor, a final and permanent provision will be made for the liquidation of the whole of the borrowed capital. The amount of debentures now outstanding is 75,000*l.* The sum of 2*l.* per share, annually for five years, will be required to pay off these claims, and the company will then be placed in a better position than it has ever occupied, as it will be trading upon its own capital, and the large sums that are annually paid for interest will accrue to the shareholders themselves. It is proposed that those who hold debentures, and who are also shareholders, shall be at liberty to apply to the same purpose so much of their debentures as shall be equivalent to the calls required. The mortgage having been regularly reduced from 70,000*l.* to 20,000*l.*, by annual instalments of 5000*l.*, a small reserve from the profits of future years would suffice to clear off this encumbrance.

"Having stated the necessities of the company, it is satisfactory to be enabled to refer to the past as affording grounds to justify the payment of 10*l.* per share, as now proposed. The amount of the company's share capital is the produce of 8000 shares at 50*l.*, issued at the commencement, 1836=400,000*l.* This capital was deemed sufficient, not only to pay for the original purchase of the works and stock, but to redeem the mortgage by annual instalments, and to cover a considerable outlay upon the old works, in order to bring them into a state of improved power and efficiency. These expectations would have been fulfilled, had it not been determined by the shareholders to erect new works upon the company's freehold property. Upon these works (still incomplete) the sum of 83,146*l.* 5s. 7d. has been expended. Although this outlay remains unproductive, and the result, for the present, is to leave the property burdened with borrowed capital, it must always be borne in mind that a comparatively small additional outlay, at any future time, would render these new works effective and profitable. On the other hand, the expenditure upon the old works of 79,345*l.* 5s. 3d. has already produced the following satisfactory results:—The annual make at Blaenavon, before the company came into possession, did not exceed, of pig-iron, 17,000 tons, and of bar-iron, 5300 tons. The make in 1847 was, of pigs, 24,041 tons, and of bars, 9839 tons; and the directors feel confident that the works were never in a more efficient condition than at present.

"With such a statement, the board trust that the proprietors will readily respond to the proposed arrangement; in the event, however, of their being disappointed in this expectation, and in the absence of some other method of raising the necessary fund, there will remain no resource but to wind up the affairs of the company. Before such a sacrifice is decided on, the directors earnestly press upon the shareholders to consider carefully the useless, as well as enormous loss, which they would thereby sustain.

"By order of the board. JAMES BOOTH, Secretary."

At the annual general meeting of the shareholders of the Blaenavon Iron and Coal Company, held the 28th April, the following report was read:—

In submitting to the shareholders a report of the management of the affairs of this company, for the year ending 31st Dec., 1847, the directors have to state, that, during this period, the produce of the works has averaged nearly 100 tons of pig-iron per furnace per week. The "make" has been, of—

Pigs	*Tons*	23,920
Metal		6,415
Best bars and rails		9,820

The sales during the year have been, of—

Pigs	*Tons*	8,283
Metal		851
Best bars and rails		9,847
Coal		17,166
Lime		4,185

And the gross profit arising from these sales has been, on—

Pigs	£3,224	6	1	
Metal	697	8	1	
Best bars and rails	13,416	8	0	
Coal and limestone	2,246	10	7	19,584 12 9
Deducting from this amount, for discount and banker's charges				5,551 2 9
There remains a balance of gross profit at the works of				£14,033 10 0
In London the charges have been—				
Interest on mortgage	£1,000	0	0	
Ditto on debentures	3,570	7	2	
Current expenses	1,409	1	3	5,979 8 5
There remains, deducting these charges, a net profit for the year 1847, exclusive of losses from bad debts, of				£8,054 1 7

With reference to these debts, it could hardly be expected that, amidst the occurrence of mercantile disasters most unprecedented, the Blaenavon Company would have been exempted from their share. The directors have to deplore the sudden failure of some of the best and oldest customers of the company during the awful commercial panic of 1847. Unpaid bills, to the extent of 10,473*l.* 13s. 6d., have already been returned; and others, to the extent of 1352*l.* 3s. 8d., when arrived at maturity, will be in the same position. The shareholders may rely upon the best exertions of the directors in reducing the loss upon these debts as much as possible. When the dividends shall have been obtained from the different estates, and the actual loss ascertained, it will be charged to the debit of profit and loss, and may be dealt with as the shareholders shall consider most expedient, regard being had to the unparalleled severity of the commercial crisis from which such results have followed.

In reference to the statement of profit at the works, the shareholders must be fully aware of the falling off in prices and orders, and of the ruinously high rate of discount which prevailed during the latter half of the year. The falling off in prices was further affected by a portion of iron having been supplied at cost price, to neighbouring ironmasters, whose men had struck for wages—it having been so arranged by the trade to prevent a general advance in wages.

An examination of the books will also show that the sum of 6627*l.* 8s. 5d. for expenses incurred in the necessary increase of tram-roads, and 1095*l.* 17s. 10d. for other improvements required, including the enlargement of the capabilities of the forge and mill, have all been charged upon the current expenditure of the year. The last-named alteration has already produced a further increase in the quantity of bars and rails made, during the past over the preceding year, of 1370 tons.

Since the last meeting, the directors have succeeded in underletting part of the Varteg as a colliery, at the minimum rental of 285*l.*; this receipt will be in reduction of the rent charge. Towards the close of the year, the declining state of the trade rendered it necessary to blow out one of the furnaces, in order to lessen the disbursements, and the loss occasioned by holding stocks of iron; and nothing but your directors, taking upon themselves personally the most serious liabilities, could have enabled the company to stand the shock caused by the difficulties which surrounded them. Their duties have been arduous and irksome in the extreme; but, having always enjoyed the confidence of the shareholders, they have not shrunk from taking upon themselves extraordinary responsibility, until the period should arrive for consulting with their constituents upon the best course to be adopted for strengthening the resources of the company. According to the provisions of the Deed of Settlement, three directors this day retire from office—Mr. Masterman, Mr. Radford, and Mr. West; they are, however, re-eligible.

The directors of the Blaenavon Iron and Coal Company, in account with the shareholders, from the formation of the company, Midsummer, 1836, to Christmas, 1847:—

LONDON.

To joint-stock capital—					
Amount paid up on 8000 50*l.* shares	£399,814	2	6		
Ditto 25 20*l.* shares	400	0	0		
Ditto 898 25*l.* scrip shares	2,155	0	0	402,369	2 6
Mortgage 70,000*l.*—less 50,000*l.* paid off (5000*l.* more since paid)				20,000	0 0
Amount borrowed on debentures				79,864	10 0
Amount received for interest, premium, and fees				10,506	18 9
Interest due on debentures	£1,905	2	5		
Dividends unclaimed	344	13	8		
Mortgage interest	500	0	0		
Masterman and Co., on loan	3,000	0	0	5,749	16 1
				£511,490	7 4

WORKS.

To amount due—viz., Abergavenny Bank	£19,629	2	0		
" Sundry persons	29,765	1	5	49,394	3 5
Profit to Christmas, 1846, inclusive, as per last year's statement				162,149	5 11
Ditto Christmas, 1847—viz., on pig-iron	£ 3,224	6	1		
" bar-iron and rails	13,416	8	0		
" metal	697	8	1		
" coal and limestone	2,246	10	7		
	£19,584	12	9		
Less bankers' interest, discounts, &c.	5,551	2	9	14,033	10 0
Total				£737,067	6 8

LONDON.

By purchase of the works, land, houses, &c., as per last year's statement				£242,930 14 11
Paid interest to vendors and sundry persons	£14,877	0	3	
Ditto mortgagees	24,487	4	3	
Ditto on debentures	21,566	9	5	
Current expenses	13,283	15	0	
Preliminary expenses	3,945	18	3	
Suspense account	10,114	0	0	
Dividends to shareholders	100,246	17	9	
				188,491 4 2
Cash—Masterman and Co.	£ 783	3	9	
Bills receivable	945	4	3	
in hand	180	7	6	1,908 15 6
				£432,930 14 7

WORKS.

By stock on hand, as per list—viz., saleable iron	£23,931	1	6	
Convertible stock	23,062	3	8	
For use of the works	69,926	18	6	
				116,940 3 8
Outlay to Christmas, 1846, as per last year's statement	£162,491	10	10	
Ditto on the year 1847—viz.: new works (new houses, stable, smiths' shop, shed, underground works, &c.	734	18	11	
Ditto, old works	150	0	0	
				163,376 9 9
Amount due from sundry persons	£ 23,373	5	5	
Cash in hand	446	13	3	23,819 18 8
Total				£737,067 6 8

We are informed that, if the affairs of the company are not in so satisfactory a state as the shareholders would wish, it arises more from the circumstances of the trade than fault in the management. We also learn, that the shareholders at the meeting, with the entire concurrence of the directors, adopted the following resolutions:—

It was moved by C. Devaux, Esq., and seconded by J. Boucher, Esq.,—"That the report, now read, as well as the debtor and creditor statements of the company, from its commencement, be printed, and copies sent to each shareholder."

Moved by Mr. Devaux, seconded by Mr. Earle, and carried unanimously,—"That a committee of the following gentlemen be appointed (with power to add to their number), to investigate the affairs of the company—to consider the best mode of discharging its liabilities, and to offer such suggestions as they may deem fit for its future management:—Messrs. Devaux, T. Moxon, P. Jones, H. Earle, Wheeley, Uzielli, and W. W. Jones."—"That this committee do publish the result of their investigation in a report, to be circulated among the shareholders."—"That an extraordinary general meeting be called, at a period of not less than 10 days subsequent to the publication of the report."

The three retiring directors were then re-elected, and the thanks of the meeting voted to the chairman and directors, for their services, and for their openness and candour in answering all inquiries.

As the committee are now occupied with their duties, we defer all further remarks upon the subject, with simply expressing our hope, that the inquiry instituted may turn out to the benefit of all interested parties.

THE MEXICAN COMPANY.

The annual meeting of proprietors of this company was held at the offices, Great Winchester-street, City, on Thursday, the 4th inst.

JOHN OLIVER HANSON, Esq. (the deputy-chairman), in taking the chair, apologised for the unavoidable absence of the chairman of the company.

J. M. MAUDE, Esq. (the secretary), read the notice convening the meeting from the *Mining Journal*, and then the following report and balance-sheet of the directors:—

REPORT.

In meeting the proprietors on the present occasion, the directors are happy to have it in their power to present a less unfavourable report of the operations of the company in Mexico, than they were able to do on the occasion of the last annual meeting. The improvement, however, is not yet sufficient to warrant their holding out any prospect of a dividend; on the contrary, from the statement of profit and loss for last year, now submitted to the meeting, the same is wound up with the trifling loss of 898 3, or about 20*l.* sterling, including 500*l.* debited to general charges for the expenses of the establishment in London. This loss, as compared with the previous year, as reported to the last annual meeting, amounting to 1351*l.* 3s., must be considered, in itself, as holding out more favourable prospects for the future, as the greatest portion of this difference arises from the improvement in the quality of purchased ores, the profit on which in 1847, 1678*l.*, more than doubled that in 1846, 835*l.* Still the extent to which Mr. Fenichio has been enabled to push this branch of his operations, is so very far short of the means which he possesses for the reduction of ores, that, as reported to the meeting of proprietors last year, in order to give greater extension to this department, he had caused to be denounced certain mines situated in Totolapa, since named Alta-Gracia, the specimens of ores from thence, and a rigid personal inspection which he had made of the mines there, having satisfied him that the district was able of being wrought to advantage, if a sufficient number of miners could be induced to establish themselves there. Unfortunately, the disturbances in the state of Oaxaca, occasioned by the war between the United States and Mexico, created such a dread on the part of the miners, being compulsorily carried off to the Mexican army, that no temptation in respect to wages would induce them to proceed to Totolapa. The consequence has been, that, during the whole of the past year, not more than eight or nine paradas, pairs of miners, have been at work in this district. The small quantity of ores, however, which these men have sent to Yarisia, have proved of such excellent quality, that Mr. Fenichio expresses the greatest anxiety to push the operations there, with more energy and effect. And, as by his last letter, dated March 7, he was aware of a preliminary treaty of peace having been concluded between Mexico and the United States, he was in hopes of being able to increase the establishment at Totolapa, to the extent desired; in fact, at the date of his last despatch, he had already made a commencement, having then 39 men at work there.

The following are extracts from Mr. Fenichio's last letter to the directors (7th March) on this interesting subject:—"As alluded to in my despatch, by last mail, I visited the district of Totolapa, on the 11th ult., and passed two days in examining the mines and making arrangements for a more vigorous prosecution of the works; I found it necessary to establish there Antonio Juares (many years foreman of mines at Yarisia) to keep our people, who are a sad unruly set, in order; also to prevent the mines from being choked up with rubbish, and worked according to ordinanza. From all I could see, in eight or nine mines I visited, there is no want of ores, although the average ley of the common ore does not exceed 4 to 4½ ozs. of silver per quintal, according to assays made from each mine. This ley would answer well if procured at Yarisia; but we require at least 6 ozs. from Totolapa to make it profitable, and to cover 20 reals per carga carriage to this establishment. That the 6 ozs. of ore could be obtained I have not much doubt, as I found particular points, in several of the mines, with a content of 8 to 16 ozs. per quintal. The first and most important step is to form a permanent establishment of 60 or 80 paradas of barrateros in the district, without which all my efforts to work those mines, with benefit to the company, will be unavailing. I have now 30 men at the mine of Alta-Gracia, and am endeavouring to get more, by the offer of paying their expenses to the district, and maintaining them three days after arrival, gratis, provided they take their families with them. In one or two months more, it will be seen whether Totolapa can be held to advantage, or have to be abandoned for want of hands to make it productive, which is the fate of many an undertaking in this country, caused by too scanty a population." "The directors, however, may be assured that I will do all in my power to avert such an alternative, as the mines of Yarisia are not producing much at present—the extraction of last month having been less than in January, both as to ley and quantity of ore.

"These changes will occur—and although I have no fear that, in the end, Yarisia will be found to furnish its fair quota of silver, yet, alone, it cannot always be relied on for profit; but other ore must be had to assist the negotiation, and Totolapa will render it, if the district can be worked to the extent I propose, with 60 or 80 paradas of barrateros. One great advantage of Totolapa is, that no dead workings are requisite. The veins are in view, with good ore, and manual labour principally wanted to develope its resources. I was particularly struck with the system adopted by the first owners of these mines, in the working of them, as there is not a single adit to be found in the district; they went down upon the veins, without deviating from them—and not so much as a cross-cut can be met with in any of the works, which are ample and free from foul air.

The mines are, in fact, well wrought; and judging from the bulk of the terreros, and the little depth of some of them, I should say that the district had not been worked for a period of more than 20 years [300 years is, no doubt, meant—according to former advices.] Where the ore was taken to for reduction, or who were the first owners, I have not been able to discover. There is not a sign of a building left; but I found, on one of the slopes near the mines, the scoria of charcoal and iron; which I presume to have been smithies for the repair of the tools. I feel great interest in the further prosecution of this undertaking; and it will be to me a source of the highest gratification, if I can overcome the difficulties at present in my way, and enable the company to derive those benefits which, I am persuaded, it is capable of rendering."

The directors have to report that, with a view of providing for the expenses of the company here, for the current year, with the concurrence of the trustees, they sold another Exchequer Bill for 500*l.*—thus reducing the indemnity fund to 1000*l.*, in Exchequer Bills, lodged at the Bank of England. Mr. Fenichio, however, by his last letter, of March 7, having remitted to the directors a bill for 500*l.*, which has been accepted, to cover last year's expenses here, which were included in his statement of profit and loss for that year, the trustees will be enabled, at the maturity of the bill, to replace the Exchequer Bill above referred to. The directors now submit the balance-sheet of the Oaxaca ledger for the past year—the balance of which, transferred to stock account, amounts to $116,952 34, or, at 4s. per dollar, to 23,250*l.* 9s. 6d. The estimated value, on the 31st December last, of the plant and stores, included in said balance, was $108,626, or, at 4s. per dol., 21,725*l.*

They likewise submit, in conformity with the Deed of Constitution, the balance sheet of the company's accounts here, from its commencement to the 31st December last, examined and attested by the auditors; and have to report, that Thos. Alexander Mitchell, Esq., M.P., and Thos. Wilson, Esq., two of the directors, and Thos. Starling Benson, Esq., one of the auditors, are in turn, by settled rotation, to go out of office; but, being eligible, now offer themselves for re-election for the offices of directors and auditors.

The Mexican Company, from its commencement, in March, 1825, to 31st Dec., 1847.

Dr. RECEIPTS.

To capital—For amount received for deposits and calls, from the commencement, to 31st Dec., 1847				£392,410 0 0
To profit and loss—Balance on the 31st Dec., 1847, consisting of dividends, interest, and profit, on sales of Exchequer Bills and stock, on the indemnity fund account, discounts on prompt payment, for stores supplied, and other items				2,188 7 2
Total				£394,598 7 2

Cr. DISBURSEMENTS.

By commissioners in Mexico—For the amount transmitted to, and drawn for by them, from the commencement of operations, in 1825, to the 31st of December, 1847				£361,753 13 6
By general expenses—For the amount disbursed, under this head, for salaries, rent, and taxes, law charges, advertisements, &c., from the commencement, to 31st December, 1847				31,146 17 4
Fixtures and furniture in the offices, including recent repairs under the lease—valued at				155 7 3
Trustees indemnity fund—For 1000*l.* Exchequer Bills, valued at par				1,000 0 0
Stamp account—For transfer stamps on hand				16 10 0
Cash on hand, 31st Dec., 1847—viz.: at the bankers', 473*l.* 1s. 6d.; at the bank of England, 37*l.* 5s. 11d.; petty cash, 15*l.* 11d. 8d.				525 19 1
Total				£394,598 7 2

The CHAIRMAN did not know that he could add anything to the report laid before the meeting—he was sorry it was so meagre; but as every proprietor had the opportunity of reading the despatches as they came from Mexico, and could know the exact state of things there, he thought that the directors could not be charged with keeping anything back from the proprietors. It appeared to him, that there were two redeeming points that they could look to with some satisfaction; the first was, that the loss, as stated in the profit and loss account of the previous year (1846), was 1351*l.*; whilst, in last year's account, it was only 20*l.*, which meant, that they had paid all their expenses of last year, with merely an outlay of 20*l.* (Hear, hear.) He hoped that would be satisfactory, particularly if they took into consideration the state of Mexico, which had been such as to interfere with, or very much to limit, their operations. (Hear, hear.) They had now only to look for a better state of things in Mexico, during which he could not say what good prospects might arise, but he might hold out to them as least a chance of seeing some improvement in their undertakings.

Mr. CHANCE asked, if the loss of the previous year had been repaid this year?

The CHAIRMAN: It was an absolute loss.

Mr. CHANCE inquired, how that loss was covered?

The CHAIRMAN said, it was taken from the indemnity fund, which was now reduced to only 1000*l.*; but it would be increased by 500*l.*, when the bill from Mr. Fenichio became payable, as alluded to in the report.

A DIRECTOR: Each year is distinct of itself; therefore, the profit and loss account of 1847 merely gives that for itself, unconnected with any other.

Mr. GODDARD asked, from what source the 500*l.* was taken?—The CHAIRMAN: It was taken from the source mentioned by Mr. Fenichio, on the other side, who had charged it in his account; and, when his bill is converted into cash, we shall be able to replace the 500*l.*, sold out of the indemnity fund, which will be again 1500*l.*

Mr. CHANCE: We shall then be in the same position, and begin the year with a loss only of 20*l.*; I think we may consider this very satisfactory. (Hear, hear.)

Mr. REES moved, that the report now read be received, adopted, and entered in the minute-book of the general courts of the company; and that copies of the same be forwarded to the proprietors.—Mr. CHAPMAN seconded the motion, which was passed unanimously.—The CHAIRMAN moved, that Thomas Alexander Mitchell, Esq., M.P., and T. Wilson, Esq., be re-elected directors of the company; and that Thomas Starling Benson, Esq., be re-elected an auditor of the company.—This resolution also was passed unanimously.—A DIRECTOR said, he quite agreed with the hon. proprietor who stated, that the accounts, on the whole, were very satisfactory. If they considered the state in which Mexico had been in, and the difficulty of getting men to engage to go to the mines at Totalapa (which part of their works had, consequently, been suspended), he thought they would agree with him, that it was through the great ability and precedence of Mr. Fenichio that they had been kept in the position in which they then found themselves. (Hear, hear.) He was happy to find matters as they were, as well for his own part as for those proprietors who had made large advances to the company. It would not be too sanguine in him, he thought, to say that, in the next year, they might, with the same good management on the other side, provided peace continued, look not only to pay all their expenses, but also to report somewhat more favourable than the present one. (Hear, hear.)

Mr. PRIOR (a director) thought they ought to express their feelings in regard to Mr. Fenichio, for the basis of everything rested on that gentleman. He had no doubt it would be gratifying to him to find that, in the report of the proceedings of this day, they had taken notice of him. Mr. Fenichio must have exerted himself very much—(hear, hear)—and, considering the difficulties in which he had been placed, more, possibly, than could have been expected. Things had not been entirely under his own control during the past year and yet he had furnished them with an account, showing their loss to be only 20*l.* That account covered all expenses, not only in Mexico, but in London. He concluded, therefore, by handing to the chairman a vote of thanks to Mr. Fenichio, which was seconded by Mr. GODDARD.—The CHAIRMAN put the resolution, "that the best thanks of this meeting be given to Mr. Pasqual Fenichio, for his great attention to the affairs of the company in Mexico," which was passed unanimously.

Mr. HOLLINGSWORTH (a director) said, he begged to move the thanks of this meeting to Mr. Maude, for his long and constant attention to his duties, as secretary to the company.

Mr. CHANCE seconded the motion, which was passed unanimously.

The CHAIRMAN: It would ill-become me, perhaps, filling the situation I do, as deputy-chairman of this company, not to bear my full testimony to the qualifications of our excellent secretary, whom I have known for a great many years. I know no one more talented, or zealous in the discharge of his duties, than Mr. Maude; and I am very glad that my friend, Mr. Hollingsworth, has been kind enough to suggest this motion.

Mr. MAUDE returned thanks for the compliment paid to his services. He had always persevered, to the utmost of his ability, to promote the welfare of the company, and would continue to do so. He had obtained the approbation of the directors on many occasions; as also that of the proprietors at their annual meetings, which was high encouragement to him. They might rely on his exertions to the end; and he hoped one of his principal duties would be, to prepare a better report for the next, than he had been able to do for the year just expired. (Hear, hear.)

Mr. GODDARD proposed a vote of thanks to the chairman and to the other directors, which was agreed to unanimously.

The CHAIRMAN returned thanks on behalf of himself and the other directors. They had been in this concern a great many years, and it was a satisfaction to the board to know that, unlike many other companies, they had not put the proprietors to a shilling expense, nor had they received so much as a cup of coffee for their labours. The directors were large proprietors, and were all determined to stand or fall by the company.

THE IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.

The fifth anniversary festival of the supporters of this highly praiseworthy institution was held at the London Tavern, on Wednesday, the 26th of April, when about 150 gentlemen assembled. The chair was taken, and ably filled, by the Right Hon. the LORD MAYOR, supported by the sheriffs of London and Middlesex, H. L. Taylor, Esq., R. W. Kennard, Esq., T. W. Kennard, Esq., T. B. Simpson, Esq., Willam Gould, Esq., Richard Moses, Esq., H. L. Taylor, Esq., W. S. Burton, Esq., and other gentlemen connected with the trades, who have ever manifested so great an interest in promoting the objects and success of the society. Grace having been said, the Right Hon. the Lord Mayor, in presenting the first toast (that of the Queen), expressed himself satisfied that, after the events of the past few weeks, at home and abroad, and contrasting the one with the other, the loyalty displayed by all members of society in this happy country, well merited the eulogisms which had been passed in other places. He (the Lord Mayor) could well anticipate the reception with which the toast would be received. We need hardly say, that his Lordship's expressions and wishes were responded to most heartily and sincerely. The usual loyal toasts having been given, his Lordship next proceeded to drink "Success to the Iron, Hardware, and Metal Trades' Pension Society." In so doing, he should not trespass on the patience of the meeting, by any lengthened eulogy as to the claims it presented, the success which had attended it, or the benefits it had conferred on those whose position in society rendered them dependent on its bounty. It was a pride to him, as the chief magistrate of this great commercial mart, to preside upon an occasion like the present, supported by gentlemen of business habits, and of the first importance in a mercantile community—it was not for him to dilate on the importance to be attached to the iron and other trades, many of the representatives of which, connected therewith, and who were associated in carrying out the objects of the society, were then present. His Lordship, after an eloquent address, resumed his seat, having given the toast with all honours. Several toasts, including that of the chairman, the sheriffs, vice-presidents, treasurer, stewards, the honorary officers of the society, and more especially the intelligent and active secretary, were given in the course of the evening, and which were ably responded to.

Mr. KENNARD, in proposing the health of the Lord Mayor, expressed, in glowing terms, the obligations which he felt the society was under to his Lordship for the honour conferred, and the interest that the chairman had ever manifested in promoting objects of charity, and relieving his fellow-citizens, or those who might require aid. The society was one which was open to the citizen of the world, and not confined to any one locality. He was proud to find that an assembly so numerous, under circumstances, were present.

The LORD MAYOR, in returning thanks, entered more fully into the merits and advantages of the institution, and adverted to the increased number to whom relief was afforded—while it was highly gratifying to find that the amount of the pension had been increased to the minimum of 20 guineas per annum. He should be happy at all times to lend his aid—while he paid a high and just tribute to Mr. Kennard for the able support rendered to the institution; that gentleman, and his family, exclusive of his friends and connections, having subscribed, by way of donations, no less a sum than 262*l.* 10s., besides annual subscriptions.

Mr. Sheriff HILL, in proposing the health of Mr. H. B. Taylor and the vice-presidents, adverted with much happy effect to the obligations which the society were under to the gentleman whose name he had associated with the vice-presidents, of whom he formed one. It was to that gentleman the merit was due of having established this society; and it was mainly to his indefatigable endeavours in the early stages, that they were indebted for its ultimate success. He (Mr. Sheriff Hill) felt assured they might still reckon on his valuable aid, as also all those who had so nobly stepped forward to support his valuable exertions.

The toast was ably responded to by Mr. TAYLOR, which, we regret, space will not allow us to enter upon.

Upon the health of the hon. Secretary being drunk distinct from the other honorary offices of the society, that gentleman, in returning thanks, took a review of the affairs and progressive advancement they had made, bearing testimony to the services rendered, not only by their late hon. secretary (Mr. Taylor), but those of their present honorary officers, who readily toiled for the public weal. It was, however, to the right hon. the chairman and the company assembled, that they were most highly indebted; while it was with pleasure he named Mr. Gould, who had, by the services rendered by him, in advancing the interests of the society, obtained, during the past 12 months, subscriptions to the amount of upwards of 140*l.*; while other members had evinced the interest they felt, the subscriptions having, during that period, nearly quadrupled the amount received in the year 1845. He was not aware, that any merit was due to him but that of doing his duty; and while he had the honour to hold the office, it would ever be his pride to aid the cause in which they were embarked—that of holding out the hand of charity to those who were oppressed.

From a statement read, we collected that the amount of donations was upwards of 300*l.*; and that of additional annual subscriptions, 75*l.* 1s. 6d.—the balance in hand at the close of the past year being 271*l.* 14s. 3d.

The Right Hon. the Lord Mayor and Sheriffs having retired, the chair was ably filled by Benjamin Fowler, Esq., and the company did not separate until an advanced hour.

We had almost forgotten to state that, previous to the Lord Mayor retiring, he gave, as a parting toast, "The Ladies," and adverted to the kindred sympathies they had already evinced, and which might be expected from their advocacy of the proposed fund for the erection of almshouses.—The toast was, as it may be supposed, warmly received.

SCHAFHAUTEL'S POWDER.—Schafhautel's method of rendering iron malleable, and cleaning it from sulphur, phosphorus, and arsenic, in some parts of Germany, has been employed with tolerable success, and produced favourable results. The method in itself is simple, and the theory appears to be more practical than such experiments in general prove. This powder consists of 1¾ lb. of the peroxide of manganese, 3¾ lb. of common salt, and 10 ozs. of potter's clay—the clay and the common salt are the most important elements. By the heat of the puddle oven, the salt mixed with the clay is decomposed. The natrium, either on account of the air, or the peroxide of manganese, attaches itself to the oxygen, and changes to natron, which, with the argillaceous and quartzose earth, forms itself into a silicate, or aluminate, of natron, and goes in the slag. The peroxide of manganese loses a great quantity of its oxygen, and forms itself as oxide of manganese with the silicious earth (from the silicum of the pig-iron) to a silicate, and prevents the loss of the metal. This free chlorine, which, with constant stirring, is brought to bear on the mass, attaches itself to the sulphur, phosphorus, or arsenic, and makes combinations, which are carried out of the furnace through the grate. From this it will be seen, that this method not only cleanses the iron, but shortens considerably the process of rendering it malleable. The quantity of peroxide of manganese can be considerably diminished when it is worked in open hearths, as in some places in Germany. It was endeavoured to introduce this method in iron smelting by cupola furnaces, but, on account of various reasons, it could not be carried into execution. It was proposed to employ sal-ammoniac instead of salt; the chlorine in sal-ammoniac is double the quantity of that contained in an equal weight of salt. No clay is required, it does not increase the slags, and the quantity of hydrogen gas in sal-ammoniac (7 or 8 per cent.) contributes much to the cleansing of the iron. The expensive cost of the sal-ammoniac has prevented its employment on a large scale.

WINNING AND WORKING COLLIERIES.

BY MATTHIAS DUNN, MINING ENGINEER.

ABOVEGROUND ARRANGEMENTS.—With regard to the mode of raising the coals from the mine, it cannot but be interesting to review the practices that prevailed during the infancy of the art, and the rapidly progressive advancement to the present extraordinary powers of production. The most rude and barbarous of these practices was the *bearing* system of Scotland, already described. Hand windlasses, or jack-rolls, were the first species of machinery employed for drawing the loads up the shafts, which were quickly succeeded by horse-gins—an early specimen of which was the cog and rung gin. The horizontal wheel, to which the horse was attached, was fitted up with wooden cogs, working into those of a vertical wheel overlying the pit, unto which the ropes were attached. This machinery was soon simplified into the present gin. As this machine was the only resource, during a long course of years, for the drawing of coals, even at a depth of 50 or 60 fms., the gins were oftentimes erected of large size, with double *starts*, whereby four horses could be applied at the same time; and, as they were driven at great speed, they were relieved every four or six hours, as the case required. The introduction of Newcomen's engine enabled the water-wheel to be made use of. It was constructed of two sets of buckets, so as to enable the motion to be reversed, and the rope-roll was attached to the same axis; over all was a large wooden cistern, with suitable valves, applicable to each set of buckets, and one of Newcomen's engines was placed contiguous, to repump the water expended upon the water-wheel back into the cistern. Lines were led from these valve-levers to the brakesman, who was stationed at the top of the shaft—a succession of levers also served to communicate the brake. In order to husband the water lost in the constant reversion of the motion, Mr. Smeaton introduced the single bucket-wheel, which worked the rope-roll by means of cog gear, so contrived that, by shifting the rope-roll, the motion was reversed, the water-wheel still keeping one course of revolution. At length the steam-engine was applied to work the rope-roll direct; but great difficulties were experienced in applying the atmospheric engine to this purpose, and much good was effected by the introduction of the counter-balance-weight, which worked in an adjoining shaft, sunk for the purpose, and which was so contrived as always to be ready with its weight to aid the engine in lifting the load from the bottom of the pit. The competition in the trade necessitated the coal-skreen; and the mode of managing the baskets at the top of the pit was to land them upon sledges drawn by horses, so as to be conveyed to the skreen, or to accumulate the coals in heaps of some thousands of tons each, to await the periods of trade. The waggonways were originally formed of beech rails, and the waggon-wheels were also of wood. The invention of the flat rope, and the Bolton and Watt double-power engine, together with a scientific arrangement of the fly-wheel, seemed to form the very *acmé* of perfection; for the operation of the rope formed a natural counter-balance, and the working entirely by steam reduced the engine to a most uniform movement, so that the counter-balance was generally dispensed with. The handles for working the engine, also, had become so improved that the steam could be applied and withdrawn with the greatest facility.

VARIETIES OF COAL.—The household coal of Newcastle comprises innumerable varieties, both in colour, texture, and quality; and it may be generally described as bright and cubical coal—compact so as to turn water into pressure; burning first to a black cinder, which in turn is consumed, leaving a small portion of ashes—specific gravity from 1·3 to 1·20. It also produces coke, but not always free from sulphur. The *Steam, or Splint Coal*, is sometimes bright, and sometimes grey in colour. In many cases, the laminæ are so open as to allow the passage of water, especially the splint coal in Scotland and Derbyshire; they all leave a white ash. The *Parrot Coal of Scotland* is a clayey-coloured laminated coal, being open in the partings, and contains more gas than any other known coal; it leaves a reddish calk. The *Cannel Coal of Lancashire* is cubical in fracture, exceedingly bright, abounds in gas, and burns to a red cinder. It is found in various places, and in different thickness; Wigan is its chief locality. The *Orrell, and the best Coals of Lancashire*, greatly resemble the middling coals of the Newcastle district, producing a tolerable coke, but far inferior to the cannel for the production of gas. The *Bovey Coal*, found imbedded in the pipe-clays of Dorsetshire, is in appearance little removed from charred wood; it is very light, and is seldom found stratified.

Anthracite, or Stone Coal, is remarkable for producing neither smoke nor flame, whose specific gravity is to common coal as 1·46 to 1·25. It is supposed to owe its nature to the influence of basalt, either by the formation of dykes or of regular strata. In the neighbourhood of Kilmarnock, in Ayrshire, there is a remarkable proof of this influence, inasmuch as three of the upper seams consist of the regular bituminous coal; whereas the fourth seam, because of its vicinity to a lower strain of basalt, is perfect anthracite. As these seams originate from a certain locality, the strata between the coal and the basalt thickens, and the anthracite seam again degenerates into the common coal. The anthracite is found in extensive districts in South Wales, the West of Scotland, and in the counties of Kilkenny and Tipperary; the very ancient collieries of the Ormond family, in the former county, having been entirely founded upon anthracite coal, which was there for many years, sold at 20s. per ton. Mr. Richardson, an accomplished chemist, Newcastle-upon-Tyne, has analysed several specimens of coal, and has obtained the following results:—

	Carbon.	Oxygen.	Azote.	Ashes.	Relat. quan. of heat by each coal.
Wylam Splint	74·86	6·28	5·9	13·9	110·3
Glasgow ditto	82·9	5·5	10·4	1·1	115·1
Lancashire Cannel	83·7	5·6	8·0	2·5	117·8
Parrot Coal of Scotland	67·6	5·4	12·4	14·5	100
Jarrow Bensham	84·8	5·0	8·4	1·7	116·6
Glasgow	81·2	5·4	11·9	1·4	112·1
Garesfield Colliery Coal	87·9	5·2	5·4	1·4	122·5
South Hetton	83·2	5·2	9·9	2·5	115

New analyses of inflammable gases, found in different seams, were made by Sir H. De la Beche and Professor Lyon Playfair, during their examination of the different collieries in 1846:—

	Wall's End Pipe.	Wall's End Bensham.	Jarrow Bensham.	Hebburn Bensham.	Jarrow Low Main.	Jarrow 5-qths S.	24 ft. below Bensham Hebb. Coll.	Gateshead Oakwellgate.
Carb. hydrogen	92·8	77·5	83·1	86	93·4	79·7	92·7	98·2
Nitrogen	6·9	26·1	14·2	12·3	4·9	14·3	6·4	1·3
Oxygen	0·0	—	0·6	0·0	0·0	3	—	—
Carbonic acid	0·3	1·3	2·1	1·7	1·7	2	0·9	0·5
Hydrogen	0,0	0·0	0·0	0·0	0·0	3	—	0·0

[We shall continue our abstract in next week's Journal.]

BELGIAN COAL MINES.—In the year 1843, Mr. Dunn had an opportunity of examining the details of working in some of the mines in the neighbourhood of Jenappe, in depth from 160 to 190 fms., in which a number of the uppermost seams have been passed through. Every colliery is supplied with a ladder pit, by which the people are constrained, under an order from the Government, to ascend and descend, the ladders being nearly perpendicular, and arranged in various stages of from 15 to 30 fms. each. The coals are drawn up the shaft in iron tubs (called *cuffats*), being about 8 ft. in length, by 3½ ft. in diameter, carrying from 35 to 40 cwts. each. These tubs stand in the bottom of the shaft, to be filled with coals brought out of the workings in wooden tubs, carrying 3 cwts. each. These tubs are drawn along antiquated tramways, chiefly by females clothed in jacket and trowsers, and who, on account of the lowness of the roads, drag the tub by means of a chain fastened to a belt around the body, and passing between their legs; their posture being nearly upon hands and feet! Owing to the thinness of the seams, and from the very inadequate manner of preparing or preserving the roads, the workings of each pit are of consequence confined to a very limited extent, which, of course, calls for a numerous succession of shafts; and, as the seams lie at short intervals from each other, they cut from the shaft bottom successively into seam after seam, by means of stone drifts—thereby compassing the working of several seams from the same shaft. The principal of working may be described as follows in a 2½ or 3 ft. seam, the shafts being generally 9 ft. in diameter. A pair of levels are extended, being each two yards wide, with an intermediate pillar of four yards, holed at intervals for the purpose of ventilation; out of these levels are turned at right angles the main preparatory workings, 5 ft. wide, with pillar between of 13 to 14 yards. If the inclination be great, these workings are driven slopewise (cross-cut). The main workings (*tailles*) are carried on in sets of 8 or 10 each, one set being in advance of another, and as they extend, the pillars are gradually taken away, to within a short distance of the whole coal, constituting in effect a species of long-wall working—the goaves and hollows being in the first place propped with timber, and then filled up with the cuttings of the bottom, the fallen roof, and the small coal. In driving these preparatory levels, the stone necessarily taken down for height is for the mos

part drawn to the surface. By thus prematurely working away the natural support of the roof under so great a pressure, and where the floor is soft, the consequence is, that a perpetual and destructive movement is induced, and to obviate the results, numerous hands are employed in the above-mentioned operations, and an enormous quantity of timber consumed; for not only are the necessary roads continually dilapidated, but the whole coal at the face is torn and crushed by the superincumbent pressure, besides the stoppings, or other applications for the guidance of the air through the workings, are subject to injury, and the effects of ventilation greatly nullified. By the time the workings have extended 300 or 400 yards from the bottom of the pit, they are no longer tenable, and the working must either be supplied by another seam, or by a new sinking from the surface; hence the vast disproportion of sinkings in that country in comparison with the mining in England. Under this state of things, the employment of horses is nearly impracticable, and it is with extreme difficulty that the tramways can be maintained three feet in height. The hewer is not paid by the tub, but, as they work in gangs, they are paid by the square metre, measured off every week, an average day's work being from four to five square metres, and the collier is charged for his house and fuel at a high rate.

The Metallurgical Treatment of Ores.

[*Continued from April* 22.]—No. XVI.

The modifications proposed by M. Boussingault are, doubtless, applicable to the auriferous pyrites of Piedmont; but it would be always necessary to take into consideration the great varieties of richness presented by the ore in question. Before deciding on any treatment on the large scale, it would be well to divide the ore into small lots, and assay each by the ordinary process of washing. Without this precaution, much time, labour, and gold, may be lost by treating very poor substances. At Marmato, as already shown, amalgamation is not employed, and the pyrites is exposed to the air, by which it undergoes a spontaneous decomposition. In Piedmont, this method is not adopted—the whole of the process hinging on amalgamation.

The following is the method in use:—Through the whole length of the valley of Anzasca, from Champagna to Pié di Muléra, auriferous pyrites is found. At Venzone, it is associated with blende and galena. It is often found in veins, and its richness is extremely variable—being from $\frac{48}{1000000}$ to $\frac{10}{1000000}$ths. The ores in this neighbourhood have been worked for a very great length of time; and there are many amalgamation houses on the different streams which water the country. These houses are, generally, small wooden buildings, containing four amalgamation mills; and there are more than 200 mills in the valley. The ores, before treatment in the mills, are stamped and picked. Each building contains a mill, with double stones, for the purpose of crushing the ore. These mills are horizontal. In this mill, the ore is reduced to the size of a pea; after which it is transferred to the amalgamation-mill. The amalgamation-mill consists of a strongly-hooped wooden vat—at the bottom of which is a fixed millstone, on which revolves an upper stone. A small quantity of the triturated ore is placed in the mill, and there undergoes another crushing—water being added, and continually agitated, by iron rakes, so as to hold in suspension the finer particles, whilst the larger and heavier are always near the millstones.

When one portion is well ground, another is added, until the mill contains about 60 lbs. of ore; 8 ozs. of mercury are then added, and the motion kept up until the amalgamation appears complete, at which period the motion of the stones is stopped. It is essential not to continue the operation too long, for a great loss of mercury may ensue from a portion being converted into sulphuret. The treatment of 60 lbs. generally lasts about 24 hours; at the end of which time the earthy, and other matters, are separated from the residuary amalgam. When a sufficient quantity has been collected, it is distilled in an iron retort, the neck of which dips into a vessel of water, in which the volatilised mercury condenses. The total loss of mercury is about a fourth of the whole quantity employed.

In Salzbourg, gold in veins is worked, and is separated by roasting, washing, and amalgamation. Very poor ores, containing gold, are treated by fusion, excepting those containing silver and copper. The ore is separated into two classes; in the first we have poor ore, in which the gold is not visible; in this case the ore is roasted, and then crushed. In the second the gold is visible—it is crushed without roasting. The ore is washed on inclined tables, and in hand-bowls. After washing, the residual matter is treated by amalgamation, and the amalgam decomposed, in an apparatus similar to that employed for the distillation of silver amalgam at Freyburg. [In our next week's Journal we shall consider the various methods of separating gold and silver.]

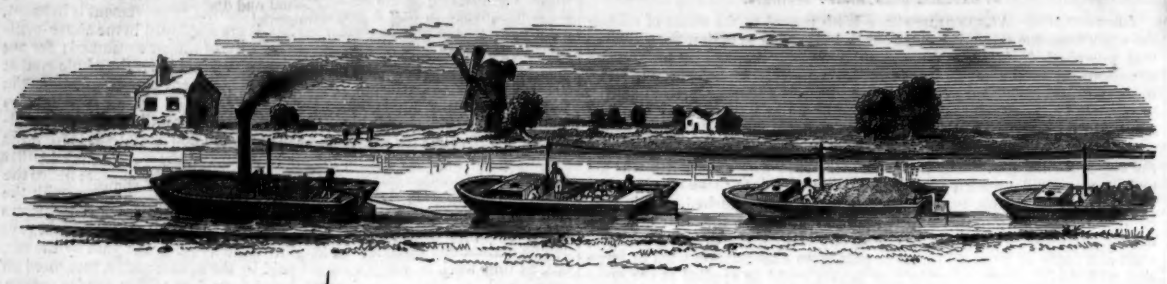
PROGRESS OF MINING IN SPAIN.

We are glad to see that the Spanish Government is devoting its particular attention to the encouragement of mining operations throughout that rich mineral kingdom, as it will not only afford employment to many thousands of its industrious population, but develope those internal resources which have hitherto, through continual wars, and civil commotions, been unexplored. We gave, in a former Number, an extract of the new law passed by the Cortes, relative to the concessions and working of the mines of Spain, which has given general satisfaction, and caused many adventurers, native and foreign, to embark in this enterprise, under the protection of the authorities. The Government has recently issued the new law, relative to working the mines of the Philippine Islands, which differs very little in point to those of the mother country.

Art. 1. All the mines belong to the Crown and its royalty, so that no one shall work them, except they have obtained them by special concession from the superior Government, and subject to the usual regulations.—Art. 2. The meaning of minerals are precious stones and every metallic substance, coal, or combustible matter, and salt, which are found on the superficie or the bowels of the earth.—Art. 3. Every Spaniard, foreigner, or naturalised inhabitant, settled in these islands, having the requisite permission, can freely make explorations for the discovery of mines, by making reparations for the injuries they may have done to any private property.—Art. 4. The following persons cannot be proprietors of mines, nor take any part in them:—1. The governors, chief magistrates, lieutenant-governors, inspectors of mines, and others specially employed in that department.—2. Lawyers, or others connected with the law, in their respective provinces or localities.—3. Priests, nor any other ecclesiastic.—Art. 24. For a mine to be considered inhabited, there must be at least eight men at work, either in the interior or exterior.—Art. 25. No embargo, or seizure, can be made on the miners or the mine, nor its dependencies, houses, &c., machinery, instruments, cattle, or anything else requisite for working it. A seizure can only be made in certain cases on the produce, always, however, leaving sufficient to carry on the works.—Art. 26. The proprietors, or directors, of a mine, can, on no account, be arrested for debt, if they keep within their mine, or the territory belonging to it.—Art. 27. Parties obtaining concessions are to pay their workmen as high wages as they possibly can.—Art. 32. All foreigners who devote themselves to mining operations shall be exempt from reprisals, in case of war or its causes, neither shall their persons, in any way, be molested, nor their property, if they observe the laws of the country.—All the other articles are nearly similar to the regulations respecting mining in Spain.

The Spanish Government, on the proposition of the Director-General of Mines, has ordered a steam-engine, on the Watt principle, to be made in England, for the working of the mines of Almaden. It will replace the one that is now employed for drawing off the water, and, at the same time, for the purpose of extracting the ore. This is the first time that the State has taken upon itself to order machinery at its own expense for mining operations, and it no doubt will lead to many contracts. At Gijon, in the Asturias, several steam-engines are to be put up, particularly at the steel manufactory of the Lenense-Asturian Company, in the vicinity of the Pola de Lena, under the direction of the experienced mining engineer, Don Adriano Paillette. They have already commenced working on a large scale the steel and iron of that province and Galicia; besides which, several experiments are being made of the iron of Biscaya and Malaga, which are worked in the factory of Heridia, and giving steel as good as, if not better than, that of Alemania. Several high furnaces are in course of construction, as coal abounds in the vicinity. One of the steam-engines, of 8-horse power, and oscillating cylinder, is in work, and gives great satisfaction. To complete the establishment, and facilitate the operation of the machinery, there is a general chimney being built to take off the smoke, composed of a handsome gallery of large dimensions, with 35° of inclination, and 57 yards in length—its outward extreme prolonging 10 to 15 yards. There has also been established, in the Asturias, a factory, for the making of every description of steel tools and implements, files, &c., which promises well. The Asturias is not only rich in ores, but has the facility of an easy land and water conveyance, and is well supplied with fuel. Mining, in general, throughout Spain, is daily advancing; and no doubt, in a few years hence, will develope itself, and open the resources which will enrich her population. Of all the countries of the continent of Europe, this is nearly the only one which has not been affected by the recent events in France, and the political commotions raging throughout Germany, Italy, &c. The Spaniard is a proud, independent being—all he requires is more liberal institutions; but, at heart, he is a strong monarchist, glories in his ancient privileges, and looks upon a Republican power as degrading to the honour of his country, which was once one of the first among nations.

ANDREW SMITH'S IMPROVED PATENT SYSTEM FOR STEAM HAULAGE ON CANALS AND RIVERS, &c.



The importance of this invention consists in its commercial advantages—viz.: the *great expedition and economy* it possesses, and the simplicity and efficiency of the means employed, as compared with horse-power, or any other means yet tried. The above sketch illustrates the patent system, as applied to *canal* haulage. For ordinary canal traffic, a boat, containing a steam-engine, of 6-horse power, is employed, in conjunction with simple and peculiar machinery, and a single warp, made of patent galvanised wire-rope, which is laid along the bottom in the middle of the canal, and so arranged that it has the facility of being instantly let go, and taken up again, without difficulty or delay—being an improved modification of the well-known principle of warping vessels; and, by this improved patent system, a haulage-boat so fitted with a steam-engine, of 6-horse power, will exert more direct force, and, in fact, tow an ordinary tug-boat after it with paddle-wheels, although driven by an engine of 18-horse power, and, unlike the paddle arrangement, without producing any surf, or making any commotion in the water—thus giving out nearly the entire power of the engine; whereas the paddle-wheel system looses about two-thirds of its effective power. This is mentioned in illustration of the merits of the invention; and, further, it has been ascertained, by practical experiments made, that such a steam haulage-boat so fitted, will tow eight canal boats at the rate of 3½ miles in the hour, with a load of 200 tons, and at the small expense of about $\frac{1}{12}$th of a 1d. per ton per mile, which is made up in the following manner—viz. (say) 10½ miles of canal:

10½ miles of rope, at 100*l.*	£1050	0	0			
Take one-third cost per annum	350	0	0			
Per day				£1	2	6
Boat, machinery, &c., cost	500	0	0			
Take 15 per cent. per annum	75	0	0			
Per day				0	4	8
Capital—say	2000	0	0			
Interest thereon, at 5 per cent.	100	0	0			
Per day				0	7	0
Men's attendance—1 engineer, at	0	5	6			
,, 1 steersman, at	0	4	0			
,, 1 assistant, at	0	2	6			
Per day of 12 hours				0	12	0
Fuel, &c.—coals, tallow, and sundry petty expenses—say				0	10	10
Daily expenses				£2	17	0
Contingences				0	3	0
Total				£3	0	0

For carrying 200 tons 42 miles per day, or 8400 tons one mile, at the rate of 3½ miles per hour—being at the rate of rather more than $\frac{1}{12}$th of a 1d. per ton per mile ($\frac{8}{12}$rds.)

Let the expense of horse trackage be compared to this improved steam system, and it be borne in mind that only 18-horse power would be employed in three steam haulage-boats for towing 24 canal boats. When horses are employed for this purpose, one horse is required for each boat, or 24 horses and 24 drivers—the expense of each driver and horse being, on an average, (say) 4s. per day, or 4*l.* 16s.; but the horses would require one day and a half to perform this distance of 40 miles, which costs 7*l.* 4s.: therefore, it will thus be seen how much there is in favour of the expense and time for this improved steam system; and there is evidently much more for tunnels, where manual labour is employed as the power for "legging" the boats through.

If canal companies and carriers will reflect, and adopt steam-power instead of horse and manual labour, canal property will still retain the valuable position as the cheapest mode for the transit of goods; but it is evident, if some such plan is not adopted as the one now proposed, canal property will be lost, and irretrievably ruined, as a mode for the transit of goods, in consequence of the successful application of steam for that purpose on railways, though the expense is much more by that way. The only difficulty that this mode has to contend against, is when locks are numerous and traffic small; but on any canal, or inland navigation, when the traffic will amount to about 1000 tons per day, and the boats can be collected to make up 200 tons for each train, there can be no doubt of the great commercial advantage to be derived by the adoption of this system of haulage, in consequence of its economy and expedition, as compared with horse-power, &c.

ON BRONZING METAL SURFACES.

[Specification of patent granted to Charles De la Salzede, of Paris, in the kingdom of France, gent., for improvements in brassing and bronzing the surface of steel, iron, zinc, lead, and tin.]—*Newton's London Journal.*

This invention consists in certain methods of coating steel, iron, zinc, lead, and tin, with brass and bronze. In order to coat metal surfaces with brass, a bath is prepared, composed of the following ingredients:—5000 parts, by weight, of distilled water, 610 parts of sub-carbonate of potash, 25 parts of chloride of copper, 48 parts of sulphate of zinc, 305 parts of azotate of ammonia, and 12 parts of cyanide of potassium. The cyanide of potassium is dissolved in a small portion (about 120 parts) of the cold distilled water; at the same time, the sub-carbonate of potash, chloride of copper, and sulphate of zinc, are introduced into the remaining portion of distilled water (contained in a separate vessel, and having its temperature increased from 144° to 172° Fahr., to facilitate the dissolution of these matters); and when they are perfectly dissolved, and the solution has become cool, the azotate of ammonia is added. After the solution has been shaken for a long time, it is allowed to stand for 24 hours; it is then decanted with a syphon, and the solution of cyanide of potassium (which should be limpid) is added thereto. If the solution thus prepared be submitted for about five hours to the action of a voltaic battery with a rapid current (such as Bunsen's, Grove's, or Daniel's battery), and at a mean temperature of 77° Fahr., it will deposit a coat of yellow copper, or brass, on the metal article immersed therein. This process may be performed in vessels of porcelain, china, glass, or wood (which may be lined with bitumen, or any isolating resinous matter); and the vessels are preferred to be of a rectangular shape.

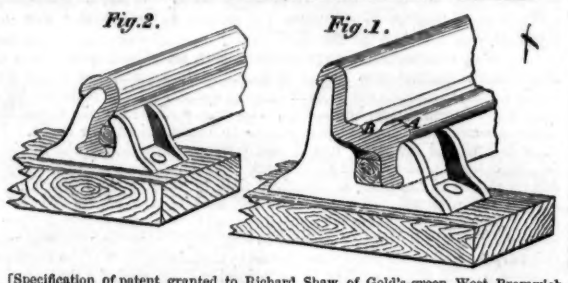
If the articles are to be coated with bronze, 25 parts of chloride of tin are to be substituted for the above-mentioned 48 parts of sulphate of zinc; the proportion of chloride of copper is to be increased from 25 parts to 48; and a plate of bronze is to be used as the electrode; in other respects the bath is prepared with the same ingredients, in the proportions above stated, and the process is conducted in the manner before described.

A bath, for coating articles with brass, is prepared, by dissolving 500 parts of sub-carbonate of potash, 15 parts of chloride of copper, 35 parts of sulphate of zinc, and 50 parts of cyanide of potassium together, in 5000 parts of cold distilled water. After the bath has been stirred, it is allowed to stand for from 24 to 48 hours; it is then subjected, in a cold state (from 25° to 30° Fahr.), to the action of the voltaic battery, during the same time, and in like manner to, the preceding baths. When this bath becomes impoverished by use, the salt of zinc, or copper, which has been absorbed, must be replaced. The bath last described may also be used for bronzing, by substituting about 10 parts of chloride of tin for the 35 parts of sulphate of zinc, and employing an electrode of bronze.

The patentee states, that "in either of the processes above described, instead of the sulphate of zinc, or chloride of tin, any neutral salts of zinc, or tin acids, may be employed, according to whether the article is to be covered with brass, or bronze, so long as the bath is sufficiently rich in potash, that there may be no action upon blue paper of turnsol." The proportions of the salts of tin, zinc, and copper, may be varied according to the colour desired to be given to the metal coating. This invention may also be applied to the coating of alloys.

IMPROVEMENTS IN RAILWAY BARS AND CHAIRS.

Fig.2. *Fig.1.*



[Specification of patent granted to Richard Shaw, of Gold's-green, West Bromwich Stafford, for improvements in the manufacture of wrought-iron railway bars and railway chairs. Patent dated Oct. 21, 1847.]

The patentee, in describing the nature of his invention, and the manner in which the same is to be performed, arranges his improvements under five heads—the first of which relates to an improved method of piling iron intended to be used in the manufacture of railway bars; and he commences by stating, that according to the mode hitherto employed for that purpose, the head or working surface of the rail is very apt to laminate—to prevent which, the patentee proposes to pile the iron of which the rail, or bar, is to be formed, in such manner, that the direction of the grain of the metal at this part shall be transverse to the length of the rail, or bar—the iron composing the stem of the same being piled in the manner usually practised; and in order that his improvements may be readily ascertained, he has annexed to his specification several sheets of elaborate drawings, illustrative of the mode pursued by him in the manufacture of rails, or bars, of various forms.

The second part of this invention relates to the construction of railway-bars, with protecting flanges, as exhibited by the accompanying diagram at *fig.* 1. The patentee states, that he is aware that rails, or bars, with protecting flanges, have been made previous to the date of his patent being granted; and he states this to point out in what respect his improvements differ in form from the rails, or bars, hitherto so constructed; and proceeds to state that it consists in forming the head, or working surface, A, of the rail, or bars, at a higher level than the part B; and, although he exhibits, by the drawings, several varieties in the form of the rail, or bar, the same principle of construction, as regards the pilings of the iron, pervades the whole of them. He also describes and represents, under the third head of his invention, a new form of construction for a particular class of rails, or bars, known as trough or hollow rails, the new form of which is exhibited by the diagram at *fig.* 2.

The fourth part of his invention relates to the application of rollers, arranged three high, for the purpose of imparting to the rail, or bar, its desired form; and, in describing this part of his invention, the patentee states, that he is aware that what are termed and known to practical men as three-high rolls have been, and are commonly, employed in the shaping of metal for various purposes; but, to the best of his knowledge, they have never before been employed in the manufacture of railway rails, or bars: he, therefore, claims, as his invention, the application thereof for this particular purpose; and he proposes, in the manufacture of rails, or bars, by these means, to pass the iron of which it is to be formed successively through, or between, the surfaces of the said rolls in opposite directions—such surfaces being shaped to produce the desired form of the rail, or bar, as exhibited by the drawings which accompany the specification; and he states that, since many of the forms exhibited by him would appear to present practical objections in their construction, he has, in each case, described and represented the form of roller to be used, in accordance with the shape of rail, or bar, required. The fifth, and last part of his invention, relates to a new form of construction of railway chairs, which he declares to consist in forming them with a cheek at one side, for the purpose of supporting the protecting flange of the rail, exhibited at *fig.* 1 of the diagram, or the trough rail, exhibited at *fig.* 2.

The patentee, in conclusion, states that he does not limit, or confine, himself to the precise details set forth and described, so long as the peculiar character of his invention be retained; but he claims substantially—firstly, the mode set forth of piling iron to be used in the manufacture of rails or bars; secondly, the mode set forth and described, of constructing rails, or bars, with protecting flanges; thirdly, the use and application of "three high rolls" in the manufacture of rails, or bars; fourthly, the mode set forth and described of forming trough or hollow rails or bars; fifthly, the constructing of railway chairs in the manner set forth and described.

Patent-office and Designs Registry, 210, *Strand*, *May* 4.

Novel Travelling Machine.—An ingenious mechanic, of Manchester (Mr. Archibald Farrie), has invented a machine for travelling, which was tried in that town on Monday last: it started from Great Ancoats-street, and proceeded through Port-street and Stevenson-square into Piccadilly; and from thence down Mosley-street, Peter-street, Deansgate, and back again up Market-street to Ancoats. The carriage was stopped every now and then to allow parties to inspect the movement of the machine—the working of which appeared to cause the driver only a slight muscular effort, aided by manual dexterity. The machine weighs 8 cwts., has no cranks, and has been worked by one man up an incline of 3 in. in the yard, while 12 persons were in it. A skilful driver can make it go at a comfortably rapid rate.

Improvements in Manufacturing Glass.—Mr. James Hartley, of Sunderland, has recently patented an improved mode of manufacturing certain descriptions of plate-glass. It has heretofore been the practice, in making plate-glass, to ladle the melted "metal" from the pot into a cistern, and then to heat the cistern for some hours; after which the metal, or glass, is poured on to a table, and rolled out. Rough plate-glass has, within the last few years, been used to a large extent at railway stations and other buildings; and such glass has been made in the manner just described. This invention relates to the manufacture of rough plate-glass, and consists in dispensing with the operation of ladling the melted metal into a cistern and heating it therein, by ladling the metal direct from the pot on to the table, and then rolling it out in the ordinary manner. The patentee finds that, when several ladlesful of metal are to be used in making one sheet, it is not requisite that they should all be poured on the table at the same time; but they may be poured on successively, as each preceding ladleful is rolled out. By this means, sheets of rough plate-glass are produced with less labour and expense; and such sheets are annealed by piling in the same manner as is now practised in annealing crown and sheet-glass, whereby the use of the costly furnaces now employed for annealing plate-glass is avoided. The patentee claims the mode of manufacturing rough plate-glass, above described, whereby the metal is ladled directly from the pot, and the expense of ladling it into and heating it in a cistern is avoided.

Passage of Gases through one Another.—If a liquid be interposed between the two poles of an electric battery, and the body to be decomposed, the acid, or the oxygen, is found to pass through that interposed liquid to the positive pole, the hydrogen and the matter of the base to the negative pole, and without acting upon the substance of the interposed liquid. Thus, suppose a vegetable colour to tinge the water in an intermediate cup, acid will pass through it without reddening it, and alkali without making it green. Nay, an acid will pass through an alkaline solution, or an alkali through an acid, without uniting, in either case, to form a neutral salt, unless the neutral compound is insoluble; for in that case it falls to the bottom.—*Lord Brougham.*

New Lubricant for Machinery.—Mr. A. Bryson, F.R.S.S.A., has proposed a composition for lubricating machinery, consisting of oil, sulphur, and vulcanized caoutchouc—which he considers to possess properties superior to any now in use.

NEW SURFACE-PACKED RAILWAY SLEEPER AND CHAIR.

Elevation of Joint-Sleepers.

Plan of Joint-Sleepers.

Although 17 years have elapsed since the successful operations on the Liverpool and Manchester Railway, which laid the foundation of that vast system which now intersects the length and breadth of these islands, as well as continental Europe and America, there are many evils yet to be remedied, and improvement has certainly not kept pace with the vast and rapid extension of the system itself. This has arisen from more than one cause—the enormous expense attendant upon any serious change in engineering works of magnitude, such as some score miles of railroad—the personal feeling of the engineers engaged, who, having once adopted a particular system, are jealous of any interference or alteration, and the division which frequently takes place among both directors and shareholders, on the discussion of such questions. The chairs, and sleepers on which they rest, are the most important part of a railway, after the permanent, or ballast, way is laid; and, although there have been numerous changes and improvements in this particular detail, there is yet a very wide field for improvement. In the early plans of railway construction, stone blocks were much used as sleepers; but to them there was found a twofold objection—viz.: too great rigidity, causing a continuous jumping motion of the engine and carriages, and a tendency to slip outwards, from the pressure of heavy trains at high velocities, and thus destroy the equality of the gauge. Timber sleepers are, at present, almost universally in use; and, although laid down on various plans, they are all more or less subject to displacement. With the continually-incresing rate of speed, the locomotive has been correspondingly increased in weight; and an engine, weighing from 25 to 30 tons, with a velocity of, perhaps, 40 miles per hour, forces, at the weakest points, the ballast, at first slightly, from beneath the sleeper, which, by its own elasticity, rises again; but, being now without a solid bearing, the next train sends it down with a jerk, displacing more of the foundation, until, at length, portions of the sleepers permanently sink—the sleeper itself becomes bent—the ends of the lengths of rail separate at the joints, and get out of level—and the veracity of the gauge is destroyed, besides tending to throw a train off the rails. We have, during the week, inspected some models of "Greaves's Patent Surface-Packed Sleepers," which appear to us to be founded on true mechanical principles, calculated to remedy the evils of the present wood sleeper, and avert the dangers attendant on those evils. The patentee dispenses altogether with continuous framing, and makes each individual sleeper sustain its own portion of the passing weight. It consists of a hollow cone of cast-iron, the base forming an ellipsis, whose transverse, or longest, diameter is 33 in., and its conjugate 18 in.—its area thus being 466, or, of a pair, 932 inches—its depth, perpendicularly, is 1 ft. 3 in.; the chair is cast on the vertex of this cone, and the rails are keyed on in the usual manner. The jaws of the chair are of the strongest form possible, each forming a simicircular horn, massive at bottom, and tapering to the top—thus enabling them to stand the greatest pressure in keying the rails up tight. On the Lancashire and Yorkshire Railway, where they have been on trial for six months, the chairs are placed at every 3 feet; and, at the joints of the rails, and at an intermediate point, the pair of sleepers are tied together with cross-iron braces—one at the bases of the cones, and another at the vertex. In laying these sleepers, an excavation is made in the ballasting of the necessary depth, to take in the conical sleeper to the bottom of the rail; the hollow of the cone is then filled with earth, or any other substance which may be better approved; on each side of the chair is a hole, through which more earth may be inserted, and the interior packed—the ballasting is then well rammed on the outside, level with the top of the chair. In practice this sleeper is found to stand more firm under the various oscillatory movements of railway transit than any other yet tried; its inverted wedge-like figure giving it a double hold on the ground, from lateral pressure; and, if well packed, it cannot sink in the smallest degree. It has, so far, given great satisfaction to the engineers on the Lancashire and Yorkshire line, and is about being tried on the Eastern Counties Railway, near the Stratford station.

REED'S PATENT RAILS AND CHAIRS.

We have, on several occasions, directed attention to the advantages presented by Mr. Samuel Reed's improvements in the rails and chairs at present used on our railways, as a prevention of those alarming accidents so often happening, from the curling up of the ends of the rails, and the consequent throwing the trains off the line. We are happy in having our opinion corroborated, after their use for nearly 12 months, on the Newcastle-upon-Tyne and Carlisle Railway, by the following report from the engineer of that company. Some specimens of Mr. Reed's invention may be inspected at the offices of Mr. C. H. Greenhow, 39, Cornhill:—

[COPY.]

Sir,—In reply to your note, respecting the rails and chairs which you desired to have tried on this railway, I have to say, that they have been in use for nearly 12 months; that they are very strong and substantial, and capable of carrying a tonnage of any extent, and answer well upon firm ground, on which they were tried. The lap-joint rails, I think, cannot be exceeded, for they are the best joints I have seen.—Peter Tate, engineer to the company: *Newcastle-upon-Tyne, March* 15.

Improvement in Mechanics.—We have been favoured with the particulars regarding one of the most powerful implements for machine making that has as yet been constructed in this or any other country, and which is at present in course of being finished on the premises where it is to operate, by the makers, Messrs. Thomas Shanks and Co, of Johnstone. The apparatus in question is a sloting machine for cutting and dressing up, by self-action, the powerful cranks and cross-heads of the largest marine steam engines, finishing them throughout from the rough block, as they come from the forge, into those beautifully polished levers which propel our sea-going ships through storms and waves, regardless of the elements. The machine is erecting for Messrs Fulton and Neilson, of Lancefield Forge, and the weight of the single casting which forms its base is 28 tons. This cast is one of the largest runs of metal in a single piece that has ever, we believe, been attempted. It was executed by Messrs. John Goldie and Co., of the Hayfield Foundry, and took four months in the moulding. It required a good deal of consideration to contrive how this enormous mass of metal was to be conveyed across the river, some fears having been entertained for the stability of the bridges. This difficulty was, however, overcome, and on Friday, last week, the large block was conveyed from Hayfield to Lancefield over Hutchison's Bridge, on a very strong carriage, drawn by six horses and 200 men. We understand this is the third machine of the same kind that has been furnished by Messrs. Shanks and Co., for engineering establishments in Glasgow, during the last nine months, with this difference only, that the one we refer to is considerably the largest, and will, when finished, with its various parts attached, amount to not less than 60 tons in weight.—*Renfrewshire Reformer.*

Directors in their Private and Public Capacity.—There are some things done by a board of directors that they would not like to do in their individual capacity, and the following is an illustration:—Mr. Thomas Banks, engineer, Manchester, some three or four years since, had occasion to attend a board of directors of the Midland Railway Company, at Derby, on the subject of his patent right to steel tires and wheels, when the directors wanted Mr. Banks to cancel his former agreement with them, and, on his hesitating, they said—"You seem afraid to trust us!" to which Mr. Banks replied, "Oh, no, I am not afraid to trust you as private gentlemen, but when you get altogether in this room, I'll trust none of you."

The Electric Telegraph.—Why is it useless sending a message by the electric telegraph? Because it must come through the post.

Steam in 1736.—Jonathan Hulls, on the 21st December, 1736, the year in which Watt was born, took out a patent for "a new invented machine for carrying vessels or ships out of, or into, an harbour, port, or river, against wind and tide, or in a calm;" and, in the following year, he published a pamphlet, detailing the nature of the invention, in which he makes the complaint alluded to in the text. Hull's pamphlet is very rare, but a copy is preserved in the library of the British Museum, and is well worth the attention of those curious in the history of steam progress.

Original Correspondence.

PROFIT ATTENDING THE OUTLAY OF CAPITAL.

Sir,—It has often been a question among mercantile men, which of all the various branches of our mining and manufacturing industry is, in the present day, producing the largest amount of profit to any individual proprietor, firm, or company, carrying on any one particular trade. The solution of such a question may not, at first sight, appear of any great moment; but, to the statistician it would be interesting, and to the enterprising it may prove advantageous. I will enumerate the most extensive branches of trade, and suggest under what heads it would be desirable to collect information. Some of your well-informed contributors may find time to fill them up. If they will do so—or if any one having information in any one particular trade, will furnish you with returns in a short period—a valuable paper may be compiled:—

First Division. Producers.	Amount of capital employed.	Whether individual proprietor, firm, or company.	No. of workmen employed.	Amt. paid annually for wages.	Value of goods annually produced.	Annual profit.	Remarks.
Miners in copper							
„ iron							
„ coal							
„ slate							
Manufrs., or smelters, of iron							
„ „ copper							
„ „ glass							
Manufacturers of cotton							
„ linen							
„ silk							
„ woollen							
Gas companies							
Brewers							
Distillers							
Railway contractors, &c.							
Second Division. Non-producers.							
Shipowners							
Merchants							
Bankers							
Water companies							
Railway companies							
Colonial & home land companies							
Trading companies, &c.							

As it often occurs that the same parties unite one or two branches of trade, where they cannot well be separated they may be given as one undertaking.—Breviat: *Cornhill, May* 3.

ON THE COMPONENT PARTS OF DIFFERENT SPECIES OF MOULDING-SAND.

Sir,—As a knowledge of the component parts of moulding-sand is of great importance to those interested in foundries, I forward to you the results of four analyses, made by Herr Kaupmann, of the laboratory of the Royal Institution, in Berlin. These were undertaken with the view that, in the event of persons requiring particular sorts of sand not being able to obtain them, they might, from a knowledge of the component parts, form a sand as good as that required. The four different sands that were subjected to the analysis were—1. Sand from Herr Freund's iron-foundry, at Charlottenburg, near Berlin.—2. Parisian sand, particularly adapted for bronze castings.—3. English sand, from Manchester, used in forming cores.—4. Sand from the Lyna Works, in the the neighbourhood of the village of Stromberg, equally useful, both for the cores and moulds. All these species are of a reddish colour. The analysis was conducted according to the usual method. The silicious earth, when placed under the microscope, and magnified 200 times, had the appearance of small round grains, without any traces of mica. All these species of sand are found in alluvial deposits.

No. 1, of 100 parts, contained—Silicious earth		92·083
„ „ Oxide of iron		2·498
„ „ Argillaceous earth		5·415
„ „ Lime		a trace.
Total		99·996
No. 2, of 100 parts, contained—Silicious earth		91·907
„ „ Oxide of iron		2·177
„ „ Argillaceous earth		5·683
„ „ Lime		0·415
Total		100·182
No. 3, of 100 parts, contained—Silicious earth		92·913
„ „ Oxide of iron		1·249
„ „ Argillaceous earth		5·830
„ „ Lime		a trace.
Total		100·092
No. 4, of 100 parts, contained—Silicious earth		90·625
„ „ Oxide of iron		2·708
„ „ Argillaceous earth		6·667
„ „ Lime		a trace.
Total		100·000

The great similarity of the different species in their component parts, is most remarkable; it appears that a fixed proportion of the several mixtures is required when the moulding-sand is to possess those good properties, which it is necessary it should do to answer the caster's expectations. According to results, proved by several analyses, Herr Kaupmann composed a moulding-sand, for general purposes, which he found particularly well adapted for the casting of statues, &c.; it was composed of 93 parts of quartzose sand, 2 parts of oxide of iron, and 5 parts of argillaceous earth, as free as possible from any admixture of lime. Delta.
Fleet-street, May 4.

IRON MINES OF NOVA SCOTIA.

Sir,—I am glad to see that the late valuable discoveries of mineral wealth in the British colony of Nova Scotia are brought before the public, through the medium of your valuable and widely-diffused Journal. Hitherto, Great Britain has been dependent upon Russia and Sweden for her supplies of superior iron, for particular purposes requiring an article such as cannot be produced from coke-iron, and especially for the manufacture of steel of surpassing excellence—without which, this great nation could not for a moment maintain its superiority over the rest of the civilised world; for what art, or what handicraft, could exist without the aid of steel? or how could the skilful and ingenious mechanic perfect his workmanship, had he not access to the inexhaustible resources which steel offers—adapting itself, with Proteus-like facility, to meet even the most capricious wants of the artisan? The opportunity now offers to shake off this dependence upon foreign nations for a supply of this essential commodity; and, from her own colony of Nova Scotia, England may, if she chooses, henceforth look for her supply of steel, or steel-iron.

From an examination of the samples of iron ore, forwarded to me from Nova Scotia, by the Londonderry Mining Company, I am enabled to pronounce, that no ore of equal excellence has hitherto been discovered in the United Kingdom; nor have I met with any which will bear comparison with it from abroad; and this has recently been confirmed to my mind by a series of experiments, from which it has resulted, that cast-steel of the most perfect quality can be produced at once by simple fusion from this most remarkable iron ore. I am aware that this assertion may appear startling, and that it may excite a sneer amongst the veteran steelmakers of Sheffield; but I am about to furnish the Londonderry Mining Company with samples of bar and cast-steel, which shall not suffer by comparison with that prepared from the best Swedish marks; and I shall be happy to convince any doubting steelmaker, by occular inspection, of the ease and facility with which the Londonderry ores can be, by *one process*, converted into cast-steel of first-rate excellence.

The prospects of the Londonderry Mining Company are of the most flattering character. The company possesses inexhaustible supplies of iron ore, whose quality is unrivalled. Coal, charcoal, limestone, and building materials, are all in abundance upon the spot—whilst the climate is temperate, and the facilities of transport are very great. From the nature of the ore, and from the results obtained in India from using hot-blast in a charcoal-furnace, I am confident that 120 tons per week of rich grey iron could be produced from a blast-furnace, 7 ft. diameter at the boshes, and 24 to 28 ft. in height, blown with heated air. Pig-iron thus prepared would take the precedence of the Scotch iron in the American markets; and it might, I believe, be manufactured at a cost considerably lower than that assigned in the advertisement, which appears in your last week's Number. For the purposes of steelmaking, the ore might either be at once converted into cast-steel by fusion, or bar-steel and cast-steel might be manufactured from it by the ordinary methods—the pig-iron being sent over to England to undergo the necessary processes.

The mineral, called ankerite, mentioned in the reports upon the Londonderry Mines, is the celebrated spathose, or steel ore; and it may be observed that, in every locality where spathose iron ore (*i. e.*, carbonate of protoxide of iron) is found, rich veins of lead ore invariably accompany it, and, in general, zinc and copper—the copper being in the state of carbonate, which is the most simple and favourable for the operation of smelting. The Londonderry Mines offer to capitalists a safe and lucrative investment, nor has any undertaking of superior merits at any time been laid before the public through the instrumentality of your columns.
Coleford, May 3. Robert Mushet.

IMPROVEMENTS IN IRON MANUFACTURE.

Sir,—In reply to the letter of Mr. Melling, in your Journal of last week, relative to the patent of Mr. G. Wetherill, I beg to state, in Mr. Wetherill's absence from the country, that the machines in question are invented for different purposes, as an examination of the specification will establish. The validity of either patent is a matter upon which interested parties need not express an opinion. J. Burrows Hyde.
Barge-yard, Bucklersbury, May 1.

FOREIGN RAILWAY CONTRACTS.

Sir,—As I feel certain that English houses are not aware of the course pursued by the Piedmontese Government, to obtain contracts for the rails, locomotives, carriages, and other materials required for their railways, I beg to send you the enclosed particulars, and request you to publish them, in case you find the contracts lately offered have been given out as therein mentioned. It will be the means of putting English houses on their guard for the future, and possibly prevent the repetition of such unworthy conduct.—Argus: *Turin, April* 25.

[We have made the inquiries suggested by our correspondent, and find that the contracts are not yet given out; possibly, the parties who have these contracts under their control have received hints, which have caused them to pause. For the present, therefore, we refrain from publishing our correspondent's particulars, but, in the mean time, shall keep a watchful eye in the proper direction.]

COLLIERY WORKING—THE LONG-WALL SYSTEM.

Sir,—Perhaps the advocates of the long-wall system of working coal, would favour your readers with the cost per ton for dead work—viz.: yard work, clearing falls, gobbing rubbish, timbering, &c.—as that would give the best idea of the system, so far as cost of working is concerned. It might also be of interest to know the quantity of air with which the workings are ventilated under the above system. J. T. W.
Nantyglo, May 1.

REFORM OF THE PATENT LAWS.

Sir,—Mutual misconception appears to have arisen between myself and Mr. Craddock; for it turns out, that I erroneously supposed him to advocate the establishment of a patent commission, that should decide upon the right of an invention to letters patent, prior to the grant; and now he supposes me to estimate more highly the literary genius than the inventive genius, which is quite opposite to my real opinion, which is this—that an *improver*, however meritorious, is not (if I may use the expression) an *originatory* inventor; I never intended to say, that originatory inventors were not fully equal to authors, even of the highest eminence. On the contrary, I say, all honour to those true magnates of their age and country, who have not, indeed, achieved conquest at the expense of blood and treasure, but who first taught us how to all but annihilate time and space, to communicate intelligence with the rapidity of lightning, or, by the aid of machinery, to place in the hands of the "hewers of wood, and drawers of water," the means of acquiring knowledge, the fabrics wherewith to attire themselves respectably—nay, almost luxuriously—and, further, delivered them from their toilsome duties, to place in their hands tasks more agreeable and befitting to the human mind.

Neither do I wish to restrict the right to rank with *originatory* inventors within a small circle; but I think Mr. Craddock would not himself view the improver of the mechanical details of his invention, how much soever such improved details might increase its practical utility, as fully equal to himself in point of merit; but, when it is remembered that *originatory* inventors are not of every day, nor of every month, it will be seen that to legislate so as to bestow on them their reward in full, would be legislating for the minority, to the ultimate injury of the public at large; and the dubious policy of a long patent right, Mr. Craddock has not disproved, for although, at first sight, his argument, to the effect that if an invention be really good, it is proper to let the inventor have an extended and stringent right, and, if bad, it can do no harm to any one, may seem unanswerable, yet facts are against him; because we find, even now, that some patents (both good and indifferent) stand in the way of improvement; and they would most certainly do so to a prejudicial degree, if made for an uncertain and extended period. On the other hand, I am not prepared to say, that original authors do not form a large proportion of our *literati*; however, I feel that, in any attempt at amendment of the Patent Laws, above all things we require union of forces; and, therefore, although I could say much more in support of my views, I will yet sue Mr. Craddock for a truce to debates upon principles of the Patent Law, and ask him for his assistance in procuring signatures to the petition, as it now stands.

Before concluding, I have to inform "Mechanicus" that I have considered his suggestions. As regards a public meeting, there appears to me to be a great practical objection, which I shall be happy to explain to him, if he would favour me with a call. His other suggestion I have adopted. To "Mechanicus," and all friends of the cause, I may state, that the petition lies at my office for signature, and will be duly advertised; and, further, that, to any persons residing in the country, who can procure a number of signatures, I shall be happy to send a copy of it. To Mr. Martin I have to say, that he must have misunderstood the clause of the petition, asking the patent to date from the day the application is ully made out; because the adoption of that plan could have no other effect than to place the priority of patent right at command of the inventor, instead of as now in the power of the Government officials. As regards his objections to boards and commissions, I fully admit them; but I trust such a one as I desire to see erected for patent purposes would be found worthy of support. F. W. Campin.
Patent-office, 210, *Strand, May* 4.

REFORM OF THE PATENT LAW.

Respected Friend,—Permit me, through the medium of thy columns, to offer a few remarks on the letter of Mr. Campin, respecting the reform of the patent laws, in which he gives it, as his opinion, that the law should not be assimilated with that of copyright, on the ground that authors rank higher, as men of genius, than inventors, for such seems to be the conclusion at which he arrives. With all due deference to his opinion, I may be permitted to remark, that in support of his ideas on the subject, he has brought extreme cases to be compared with each other. No one will certainly deny, that the inventor of a complicated pair of snuffers cannot be considered a Milton—the comparison, in fact, approaches to the ridiculous; but would it not be equally absurd to compare the mere novel writer with a Gray? The former may have no qualification for his task, but the ability of pampering the vitiated taste of a demoralised class; the latter is one of the wild sons of genius, whose ideas are in advance of his age. Genius, then, cannot be the standard for measuring the amount of protection afforded to individuals; if it was, thousands of authors would be treated with a dose of that commodity on the homœpathic principle; while many inventors would not object to submit to the test, if an oracle could be found to decide on the subject. As the laws now exist, the writer of an immoral work receives protection on infinitely easier terms than the inventor who, after years of study and investigation, modifies the steam-engine, so as to gain 50 per cent. in power on the fuel consumed. The first may accumulate a fortune—the latter may, after sacrificing his time and property, never reap any benefit himself. In respect to such men as Milton, or Gray, the law can rarely offer them any protection, as the production of their brains are for the benefit of a future age—consequently, their claims can only be acknowledged by posterity: it is, therefore, for the mass of authors and the mass of inventors that protection is required; and these two classes may supply rank together, as far as genius is concerned, and might be protected on equal terms. Of course, the machinery of a patent office would be more expensive to maintain than a Stationer's Hall; but the expense might be met by an annual tax on each patent—a tax which might be very moderate, provided the Chancellor would forego his claim of 50*l.* for signing his name on each sheet of parchment. One great hardship, justly complained of by inventors, is, that for every modification of an invention, made at various intervals, in the same machinery, a fresh patent must be obtained. Thus, during late years, a number of patents have been drawn by T. Craddock, of Birmingham, for improvements in the steam-engine, entailing an enormous expense on himself; and those who know anything of the anxiety, the time and money, expended in making experiments in machinery, will comprehend how vexatious it is to be compelled to pay a large sum for the privilege of claiming a right of property in the fruits of those researches, without which they would be snatched from the inventor by unscrupulous pirates; but when that privilege must be repeatedly purchased for improvements in the same machinery, it is impossible not to see the defect of the law which authorises the levying of such contributions from men of science. It is certainly possible, that the immense improvements made by T. Craddock in the steam-engine would be discovered at a future period, had he never studied science; but surely that can be no reason why he should not receive protection on the same terms as an author, whose works are of such a nature, that it would be well for the world if they never saw the light. If all inventors are not Shakspeares (they are Chattertons rather), they are as much entitled to protection as the manufacturer of books, who may have just enough talent to give a description of various quadrupeds, for the benefit of the rising generation. I can see sufficiently in the writings of Mr. Campin to conclude, that he will not take these remarks otherwise than according to the motives which have prompted their expression; and while differing from him in the details proposed to be brought before the Legislature for the reform of the Patent Laws, I, in common with other inventors, feel greatly indebted to him for his truly praiseworthy efforts for effecting an alteration on the present system. John De la Haye.
Liverpool, 4 *mo.* 26.

EVAPORATION OF WATER.

Sir,—You some time since inserted a letter of mine, on the "Permeation of Caloric and Generation of Steam;" we observe, in your last few Numbers, official reports on experiments on coal. Report No 6 states, that "each pound of coal consumed had evaporated 1029 lbs. of water from the temperature of 210° Fahr." being the standard temperature. The report does not say, whether this was into free space, or under pressure; if the latter—should not the pressure in the boiler have been taken into account, as increasing or diminishing the evaporative power? and would not the abiding temperature of the confined steam assist the evaporation?—A. T. J. Martin: *Penzance, April* 25.

COUNSEL'S OPINIONS.

Sir,—In your and other periodicals containing reports of public meetings, we frequently see that some unfortunate shareholder states, that he has obtained counsel's opinion to such and such an effect. The opinion, however, be it remembered, depends on the manner in which the case is stated—one false idea, or averment, vitiating the whole. The premises being false, the conclusion itself would, of course, be erroneous. It is the curse of this age, of speculating men, and of British society in general, that our expediency statute book and ruled decisions are unknown, or not understood, by the mass of the people now under the plague of legal Egyptian darkness, and law-*ful* bondage. Brevity is the soul of law as well as of wit, but there is no end to expediency statutes, when *justice* and mercy are in abeyance.—A. T. J. Martin: *Penzance, April* 25.

JOINT-STOCK BANKS.

NUMBER AND RESIDENCES OF THE PARTNERS OF THE JOINT-STOCK BANKS IN LONDON.

The following is an Analysis of the Lists of Shareholders in the several Joint-Stock Banks of London, in Jan., 1848, from the returns published in the *London Gazette*:—

Description of Shareholders.	Lond. and Westminster.	London Jt.-Stck.	Union Bank.	Commercial Bank.	London & County.	Total.
Resident in London, and within 15 miles	707	627	392	112	118	1956
In other parts of England	360	174	97	55	253	939
Resident in Scotland	50	19	88	7	1	165
Resident in Ireland	12	—	2	—	—	14
Resident abroad	22	9	6	10	—	47
Total	1151	829	585	184	372	3121

Speculation in 1825, 1835, and 1845.—The following is a digest of the amounts of capital proposed to be invested in home and foreign speculation at the periods specified:—

	Home Schemes.	Foreign.	Total.	Paid-up & depos.
1824 and 1825	£156,778,630	£48,189,000	£204,967,630	£35,014,698
1834 to 1837	129,073,700	21,175,000	150,248,700	22,616,070
1844 and 1845	612,262,200	79,250,000	691,512,200	78,448,420

Railway Iron.—In consequence of the critical state of affairs in the German waters, owing to the existing hostilities between the Danes and Prussians in Schleswig-Holstein, application has been made to the revenue authorities, by an eminent metropolitan firm, for a cargo comprising a very considerable quantity of railway iron, which had been shipped in a German vessel, for Bremen, at one of the Welsh ports, and had proceeded part of the way to her destination, to be relanded at the original port of shipment, the voyage being for the present abandoned. In addition to the necessity, which is evidently considered to exist for such precaution, this instance affords palpable proof, if any were required, of the unhappy consequences of national dissentions and warlike proceedings, in causing the temporary abandonment of importations of articles of merchandise intended for the internal service and benefit of the country.

Railway Calls.—The amount of calls falling due in May is 2,605,868*l.*—the proportion of which, called by foreign companies, is 38,500*l.*—being within 236,000*l.* of the total for the corresponding period of last year. It may also be observed, that the monthly average this year has hitherto almost kept pace with that of 1847, the amount per month having then been 3,506,000*l.*; while during the five months of 1846 it has reached 3,127,000*l.*

Produce of Gold in Russia.—Accounts from St. Petersburg give a summary of the returns of gold delivered from the mines of the Ural Mountains, during the half-year, ending the 31st December last. The quantity of gold produced in the royal mines during that period had been 60 puds. 27 lbs. 77 sol. 79 parts. The private mines had produced 101 puds. 24 lbs. 1 sol. 76 parts. The quantity of platina obtained from the Crown properties and from private mines had been 18 lbs. 92 sol. 17 parts. The royal and private mines in the Altai Mountains, and in East and West Siberia, had produced, in 1847, 1434 puds. 12 lbs. 57 sol. of gold; and the district of Nertschinskinche 25 puds.,—making a total of 1780 puds. 37 lbs. 69 sol., for the year, 1847, independently of the silver obtained from the Altai Mountains and Nertschinskinche, which amounted altogether to 168 puds. 25 lbs. more than in 1846.

Ayrshire Iron Company.—A special general meeting of this company, called by the directors, was held on Monday last, at one o'clock, in Comrie's Royal Hotel, Glasgow,—James Watson, Esq., in the chair.—The meeting, which was convened for the purpose of considering the propriety of winding up, was purely a *pro forma* one, as the dissolution of the company had been agreed on at a previous meeting; but it was necessary, for the validity of the step, that a certain period of notice should be given. The dissolution of the company, and the winding up of its affairs, were unanimously agreed to.

Cast-Steel Manufacture.—By bringing the following queries under the notice of persons practically acquainted with the subject, you will probably elicit answers of value to many besides the inquirers—viz.: Can small articles be cast, of cast-steel, with any degree of sharpness; and by what means?—Can these cast-steel articles, so cast, be made to receive any degree of hardness; and by what methods would such steel, when annealed, be capable of being turned?—Which is the best mode of proceeding in making and melting cast-steel, as regards fluxes, heat crucibles, &c.?—J. and W. Dean: *Newcastle, March.—Mechanics' Magazine.*

Soap Returns.—By returns, just printed, obtained by Mr. Hutt, M.P., it appears, that in the year ending the 5th of January last, 1,955,023 lbs. of silicated soap were made in Great Britain, 160,065,641 lbs. of other hard soap, and 14,279,425 lbs. of soft soap. In the same period, the quantity imported into Great Britain from Ireland was 170,249 lbs. of hard, and 2560 lbs. of soft soap. The amount of duty was 1128*l.* 9s. 2d. The number of licenses granted to soapmakers in the year was 316, of which 147 carried on business in England, 19 in Scotland, and 150 in Ireland.

Plymouth Great Western Dock Company.—An extraordinary general meeting was held at the Royal Hotel, Plymouth, on Tuesday last—Colonel H. B. Harris, in the chair.—Mr. C. Whiteford (the secretary) read the notice calling the meeting, and said, the principal thing they would have to consider was, whether they would pass the draft of a bill which he would now explain to them, and which was entitled, "A Bill to enable the Plymouth Great Western Dock Company to raise further capital, and to authorise the Great Western, the Bristol and Exeter, and the South Devon Railway Companies, to subscribe to the Plymouth Great Western Dock Company, and for other purposes." After a warm discussion, the following resolution, proposed from the chair, and seconded by Mr. T. Woollcombe, was carried by a large majority:—"That this meeting do approve of the draft, or copy, of a bill now submitted to them, subject to any alterations or amendments which may be made in the said bill during its progress through Parliament, and that the corporate seal be affixed thereto."

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY 37
BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th; and from Suez on or about the 10th of every month.

For rates of passage-money, plans of the steamers, and to secure passages, apply at the company's offices, No. 122, Leadenhall-street, London.

EASTERN ARCHIPELAGO COMPANY.—Incorporated by ROYAL CHARTER.

Capital £200,000, in 2000 shares, of £100 each. 38
CHAIRMAN—JOHN MACGREGOR, Esq., M.P.
BANKERS—Messrs. Glyn and Co.

The objects of this company are to carry on MINING, AGRICULTURAL, and TRADING OPERATIONS in the EASTERN ARCHIPELAGO, and the ACQUIRING and DISPOSING of LANDS in the island of LABUAN and the parts adjacent (BORNEO)—a region abounding in mineral wealth—most fertile in all the valuable tropical productions, and very happily situate for the purposes of commerce. The working of the coal mines in those districts, so highly important to the promotion and extension of efficient and economical steam communication with our eastern possessions, will form a main feature in this company's operations.

By virtue of the company's charter, each shareholder's responsibility is limited to the amount of his subscription, and the capital may be increased to £400,000, and further increased, with the consent of the Board of Trade.

A detailed prospectus, with a form of application for shares, and an inspection of a copy of the charter, may be obtained at Messrs. GLEDSTANES & CO.'S, 3, White Lion-court, Cornhill.

CALEDONIAN RAILWAY COMPANY—LOANS ON DEBENTURES.—TENDERS OF LOANS ON DEBENTURE BONDS are now RECEIVED in sums of not less than £500, for any number of years not exceeding five. Interest to be at the rate of 5 per cent. per annum, payable half-yearly, in London, Edinburgh, Glasgow, or in any country bank. 39

Tenders to be addressed to this office, giving full name and address of lender.—Parties may also communicate with Messrs. Foster and Braithwaite, 68, Old Broad-street, London.

By order, D. RANKINE, Treasurer.

Caledonian Railway Office, Edinburgh, Feb. 25, 1848.

GOLDSCOPE SILVER AND COPPER MINE, in the VALE OF NEWLANDS, KESWICK, CUMBERLAND.

Capital £10,240, in 2048 shares, of £5 each.—Deposit £2 per share. 40
ON THE COST-BOOK SYSTEM.
OFFICES—ROYAL BRITISH AND FOREIGN MINING OFFICES, 140, *STRAND, LONDON.*

This ancient COPPER MINE is now reworking with great advantage, and only 875 shares remain for the public, for which applications should be addressed to the above offices, where detailed prospectuses, reports, and plans, with specimens of the mine, may be seen. Further information may be had on applying to the manager, Captain W. Clemence, on the mine.

CORNWALL NEW MINING COMPANY.

Capital £100,000, divided into 20,000 shares, of £5 each.
(With power to be increased.)

To be incorporated, in pursuance of the statute of 7 and 8 Vic., cap. 110—by which the responsibility of each shareholder is limited. 41
Deposit 20s. per share.
Not to be Paid until the Company is completely Registered and Incorporated.

The CORNWALL NEW MINING COMPANY is ESTABLISHED to WORK a SERIES of TIN and COPPER MINES, chiefly in the district of ST. IVES, which has hitherto afforded a larger profit on its return of ore than any other part of the county.

In pursuance of this plan, five of this description have been already selected—viz.: Georgia Tin Mines, Trewortha Tin and Copper Mine, Bray Tin and Copper Mine, Trevarno Tin and Copper Mine, and Wheal Squire Tin and Copper Mine, with whose owners the committee have been enabled to make such advantageous arrangements, as to enable them to work one or more with even a small portion of the proposed capital.

These mines are not only known to contain mineral ores of immense value, but the workings are already so far advanced, that the lodes ascertained and reached must produce early and large returns; and, in addition to the above, there are others which the committee have secured on sufficient public support being obtained.

With a view of inducing the public generally to avail themselves of such a beneficial employment of their capital, the committee have made the shares £5, and of which only £2 10s. is to be paid within 18 months—limiting further calls to the control of the subscribers themselves, and to be made only when a dividend shall have been declared.

Applications for shares to be made, in the usual form, at the offices of the company, 17, Essex-street, Strand; and to the following brokers and agents, of whom detailed prospectuses may be obtained:—Messrs. G. and T. Irvine, Liverpool; Messrs. Cardwell and Sons, Manchester; Messrs. J. Scott and Son, Birmingham; Messrs. Rhodes and Hayes, Leeds; Messrs. Brady and Co., Hull; Mr. Joseph Clarke, jun., Southampton; Mr. Chas. Claye, Halifax; Messrs. William and Charles Skardon, Plymouth; Messrs. W. Moore and Co., Huddersfield; Mr. Thomas Dewhirst, Bradford; Mr. Henry Yatcher, Exeter; Mr. Ralph Dodsworth, York; Mr. W. F. Collier, Brixham; F. Crowe, Great Yarmouth; Mr. Charles Vincent, Dartmouth; Messrs. Edward Morgan and Co., Norwich; Messrs. Robinson Crusoe and Son, King's Lynn.—Prospectuses can also be had at the office of the *Mining Journal*, 26, Fleet-street, London. GEORGE LOCKWOOD, Secretary.

Office, 17, Essex-street, Strand.

PROFESSIONAL LIFE ASSURANCE COMPANY,
Connecting the Clerical, Legal, Military, Naval, and Medical professions, and holding out advantages to the public not hitherto offered by any similar institution.
Incorporated. - Capital £250,000.
Established upon the mixed, mutual, and proprietary principle. 42

Rates essentially moderate.—Every description of policy granted. Immediate, survivorship, and deferred annuities; and endowments to widows, children, and others.—Every policy (except only in cases of personation), indisputable.—The assured permitted to go to and reside in Canada, Nova Scotia, New Brunswick, Australasia, Madeira, Cape of Good Hope, and Prince Edward's Island, without additional premium.—Medical men remunerated for their reports.—Loans granted on real or personal security.—One-tenth of the entire profits appropriated for the relief of the assured while living, and of his widow and orphans.—Annuities granted in the event of blindness, insanity, paralysis, accidents, and any other bodily or mental affliction, disabling the parties. Persons of every class and degree admitted to all the advantages of the corporation.—Rates for assuring £100 at the age of 25, 35, 45, and 55, respectively—namely, £1 14s. 6d., £2 5s. 6d., £3 4s. 3d., and £4 18s. 6d.

Prospectuses, with full details, may be had at the office.—Applications requested from parties desirous of becoming agents. EDWARD BAYLIS, Actuary and Secretary.

Offices, 76, Cheapside, London.

PATENT TIDAL WHEEL COMPANY—(Completely Registered).—The directors of this company beg to inform Contractors, Millers and others, who may be desirous of availing themselves of the use of their PATENT WHEEL, by which a considerable saving is effected, that the company being now completely registered, they are prepared to RECEIVE PROPOSALS for LICENSES, which will be entertained with the least possible delay. 43

Applications are requested to be accompanied by a statement of the situation where a mill is proposed to be erected—the depth of water and velocity of current in feet per minute, and also the amount of power desired.

A model wheel, 7 feet in diameter, may be inspected at the company's offices, where also full information relative to the invention may be obtained, by previous communication with the secretary. FREDERICK BENNETT, Secretary.

Offices, 1, Walbrook-buildings, Mansion-house, London.

PATENT ALKALI COMPANY'S IRON PAINT.—This PAINT, now first offered to the public, is the PRODUCT of a PATENT PROCESS, and possesses VALUABLE and PECULIAR QUALITIES, not otherwise attainable. Its colour is a purple-brown—it is perfectly innocuous—is far more durable than lead paint, and two coats are fully equal to three of any other paint. A single coat will be sufficient to demonstrate this. It dries rapidly, and its durability is very great. 44

From its chemical composition, it is especially, and above all other paints, adapted for covering iron; also wood, and stuccoed, or brick walls. The peculiar oxidation of the base of this paint makes it impossible that further change should take place in its composition. Its identity with iron secures it from galvanic action, so injurious to the durability of lead paints on iron work. It has been exposed on shipping to the action of seawater, and the sulphuretted hydrogen, so prevalent in sea-ports and tidal harbours, for three years, without change.

Its *cheapness* and *strength* render it admirably adapted for iron railings, farm buildings, and shipping. It will also cover creosoted timber. Price, by the ton, £20, delivered in London. All orders to be addressed to the office of the company, 20, Fenchurch-street, London; where testimonials may be seen as to the value of the paint.

EVANS, BROTHERS, Agents.

IMPORTANT TO RAILWAY AND STEAM NAVIGATION COMPANIES, MANUFACTURERS, AND ENGINEERS.
W. BROTHERTON AND CO.'S 45
PATENT LUBRICATING FLUID (or Animal Oil) FOR ALL DESCRIPTIONS OF MACHINERY.

W. B. & CO. have the pleasure to state, that the above article is extensively used in her Majesty's Steam Navy, and by several of the principal Steam Navigation and Railway Companies, and is pronounced by them, and by the first practical engineers of the day, to be far better adapted for the purposes of lubrication than any other article hitherto used for such purposes. The Patent Lubricating Fluid is equally applicable for the most intricate and fine pieces of machinery, as for the heaviest bearings of the steam-engine. It is cheaper, much more economical, and cleaner than oils at present in use; is free from smell, and calculated to affect a vast saving in the expenditure of working steam powers.

Further particulars can be had, and testimonials seen, by application to the manufacturers, W. BROTHERTON & CO., Hungerford Wharf, Strand, London.

N.B.—The above article will burn in lamps, and give a light equal to the best sperm oil.

UNDER BRITISH AND FOREIGN LETTERS PATENT.

TO CAPITALISTS—FIRST CLASS INVESTMENT.—SHARES TO BE DISPOSED OF, in valuable patents, recently sealed, and in works connected therewith. The produce of soft stone, chalk, and sand quarries, is indurated and rendered impervious to wet, frost, vermin, &c.; also plaster of Paris, carton-roof sheeting, &c., for all building and other purposes. 46

Further particulars, and various specimens to be seen, at Messrs. Hutchison, Willford, and Co., the patentees, East Temple Chambers, 2, Whitefriars-street, Fleet-st., London.

THE PATENT OFFICE AND DESIGNS REGISTRY,
No. 210, STRAND, LONDON.

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION of INVENTIONS and DESIGNS, with Reduced Scale of Fees. 47

Messrs. F. W. CAMPIN and CO. offer their services, and the benefit of many years' experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to VALIDITY, economy, and dispatch—assisted by scientific men of repute.

Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen.

Application personally, or by letter, to F. W. Campin and Co., No. 210, Strand (corner of Essex-street).

This day, price 1s.,
AN APPEAL TO PARLIAMENT from an ORDER of the COMMISSIONERS OF RAILWAYS, with Reference to the GAUGE of the TAW VALLEY LINE. By the DIRECTORS of that RAILWAY. 48
London: Smith, Elder, and Co., 65, Cornhill.

This day, price 1s.,
AN APPEAL ON BEHALF OF THE FARMERS AND MINERS OF DEVON AND CORNWALL, against the LAST DECISION of an EX-COMMISSIONER OF RAILWAYS. 49
London: Smith, Elder, and Co., 65, Cornhill.

Just published, Part I.,
COMBUSTION of COAL, CHEMICALLY & PRACTICALLY CONSIDERED. With coloured plates. 50
By CHARLES WYE WILLIAMS, Esq.
London: Simpkin, Marshall, & Co., and J. Weale—*Birmingham:* Wrightson & Webb.

THE PATENT SAFETY FUSE,
FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and most EXPEDITIOUS MODE of effecting this very hazardous operation. From many testimonies to its usefulness with which the manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c.:—"I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of this." 51

Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Camborne, Cornwall.

FOURDRINIER'S PATENT SAFETY APPARATUS, for PREVENTING ACCIDENTS IN MINES AND OTHER PLACES, WHEN THE ROPE OR CHAIN BREAKS.

By the ADOPTION of this INVENTION the LIVES of the WORKING MINERS may be PRESERVED, and the PROPERTY of the MINE OWNERS PROTECTED from the serious consequences of either of the following accidents—viz.: 52

1. From the men, or the load, being precipitated to the bottom of the shaft when the rope or chain breaks: in this case the apparatus is *self-acting*.
2. From either the men, or load, being drawn over the pulley: in this case, also, the apparatus is *self-acting*.
3. From the fearful consequences to men or load of a "whirl," or run: in this case the result is equally *certain*.

A COAL PIT, with the SAFETY APPARATUS ATTACHED to the CAGE, is daily at WORK near BURSLEM, in the STAFFORDSHIRE POTTERIES.

To inspect the apparatus, or to obtain any further information, application may be made to Mr. Edward N. Fourdrinier (the patentee), Cheddleton, near Leek, Staffordshire; or to Mr. Joseph Fourdrinier, 69, Arlington-street, Camden Town, London—who are prepared to GRANT LICENSES for the USE of the PATENT.

PATENT GALVANISED IRON AND WIRE ROPE WORKS,
MILLWALL, POPLAR. 53
ANDREW SMITH begs to inform the Mining, Railway, and Shipping interests, that he has obtained a PATENT for an IMPROVED METHOD of GALVANISING IRON, producing a much superior article at a considerable saving in cost—the improved process for galvanising wire rope, adding only £10 per ton instead of £20, under the ordinary processes. The rope is extensively used in damp situations, for mining and railway purposes, and for ships' standing rigging.

LAMBERT'S PATENT FLEXIBLE DIAPHRAGM WATER VALVES, or TAPS.—A certain PREVENTATIVE of LEAKAGE, superseding the use of the metal plug-tap, which is so continually out of order. They are more durable, less expensive, and being nearly frictionless, are opened and closed with perfect ease. They have been tested under various pressures, and have given the greatest satisfaction.—MANUFACTURED ONLY by the Patentees, 54
THOMAS LAMBERT & SON, Brass and Cock Founders,
30, New-cut, Blackfriars-road.

PATENT FLEXIBLE INDIA-RUBBER PIPES AND TUBING, for Railway Companies, Brewers, Distillers, Fire-Engines, Gas Companies, Gardening and Agricultural purposes, &c.

THE PATENT VULCANISED INDIA-RUBBER HOSE-PIPES 55
are made to stand *hot liquor* and *acids*, without injury—do not become *hard* or *stiff* in any temperature (but are always perfectly flexible); and as they require NO APPLICATION of oil or dressing, are particularly well adapted for *Fire Engines, Pumps, Gas, Beer-Engines, Gardens*, and all purposes where a *perfectly Flexible Pipe* is required.

Made all sizes, from ¼-inch bore upwards, and of any length to order.

Vulcanised India Rubber Garden Hose, fitted with brass-taps, Copper branch and Rose's complete, ready to be attached to pumps, water-butts, or cisterns.

Sole manufacturer, JAMES LYNE HANCOCK,
Goswell Mews, Goswell-road, London.

N.B.—Vulcanised India-Rubber Washers, of all sizes, for joints of hot-water and steam-pipes, and *Vulcanised Sheet Rubber*, any thickness, for all kinds of joints, and other purposes.

PATENT IMPROVEMENTS IN CHRONOMETERS, WATCHES, AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street, watch and clock maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6 gs. each; in gold cases, from £8 to £10 extra. Gold horizontal watches, with gold dials, from 8 gs. to 12 gs. each. 56
DENT'S PATENT DIPLIEDOSCOPE, or meridian instrument, is now ready for delivery. Pamphlets containing a description and directions for its use 1s. each, but to customers gratis.

TO ENGINEERS AND BOILER-MAKERS.
LAP-WELDED IRON TUBES, FOR MARINE AND LOCOMOTIVE STEAM-BOILERS,
TUBES FOR STEAM, GAS, AND OTHER PURPOSES,
ALL SORTS OF GAS FITTINGS. 57
THE BIRMINGHAM PATENT IRON TUBE COMPANY,
42, CAMBRIDGE-STREET, BIRMINGHAM, & SMETHWICK, STAFFORDSHIRE,
MANUFACTURE BOILER and GAS TUBES, under an exclusive License from Mr. R. Prosser, the patentee. These tubes are very extensively used in the boilers of marine and locomotive steam-engines in England and on the Continent—are stronger, lighter, cheaper, and more durable than brass or copper tubes, and are warranted not to open in the weld.
42, CAMBRIDGE-STREET, CRESCENT, BIRMINGHAM.
WORKS—SMETHWICK, STAFFORDSHIRE.
LONDON WAREHOUSE—No. 68, UPPER THAMES-STREET.

LAP-WELDED IRON TUBES.
W. H. RICHARDSON, Jun., and CO.,
MANUFACTURE every description of WROUGHT-IRON TUBES, for Locomotive and Marine Boilers, Gas, Steam, and other purposes. 58
PATENT TUBE WORKS,
DARLASTON, STAFFORDSHIRE.

TO ENGINEERS, RAILWAY AND STEAM-BOAT COMPANIES,
AND THE OWNERS OF STEAM-ENGINES IN GENERAL.

W. & C. MATHER beg to call the attention of the above parties to their PATENT ELASTIC METALLIC PISTON. 59

From the great satisfaction it has already given, they can, with confidence, recommend it. The following are some of its excellent properties:—

1. The great, equable, and mild elasticity: its being perfectly cylindrical and self-adjusting—thereby enabling it to yield, with the least possible friction, to any inaccuracies of the cylinder, whether oval or taper.
2. Its extreme simplicity and lightness—the packing consisting of ONLY TWO PIECES OF METAL, having vertical and horizontal elasticity in due and proper proportion, independent of each other—the horizontal elasticity being also independent of SCREWING DOWN THE JUNK RING OR COVER.
3. It takes the least possible space; and is, therefore, well adapted for air and water pumps.

The above patent was unsuccessfully opposed by Mr. Goodfellow, the patentee of a piston, having *three angular rings*, of a bevil form.

The Solicitor-General conceived that there was not the slightest similarity between them, as may be seen from the subjoined letter from Mr. Carpmael, through whom the patent was taken.

W. and C. M. can refer to upwards of 100, made since the date of the patent (April, 1846), each of which is giving entire satisfaction. They beg to call attention to the fact, that, in a number of cases, they have replaced those made of *three annular rings of the bevil form*, a description of which appeared in the *Mining Journal* of Saturday, October 2, 1847.

[LETTER REFERRED TO.] *April* 2, 1846.

DEAR SIRS,—Mr. Solicitor-General took the hearing in your patent yesterday, at the Privy Council, and decided that the invention did not *interfere*; we are, therefore proceeding with the patent. We are, your obedient servants,

Messrs. Mather. POOLE & CARPMAEL.

The object of publishing the above letter, is to convince parties wishing to use W. and C. Mather's piston, that they have nothing to fear from the caution which accompanied the advertisement referred to, or the unfounded reports which are industriously circulated from the same quarter.

Locomotive and other pistons guaranteed for *twelve months*.

Salford Iron Works, Manchester, Sept., 1847.

IMPROVED LIFTING JACKS,

IMPROVED RATCHET JACK. HALEY'S PATENT LIFTING JACK.

MANUFACTURED BY
W. AND J. GALLOWAY,
PATENT RIVET WORKS,
MANCHESTER.

*** The attention of parties who employ
Lifting Jacks,
is respectfully requested to the superiority of those annexed, over those hitherto in use.

FOREIGN CATTLE AND PROVISION COMPANY.
REGISTERED PROVISIONALLY.
(Pursuant to the Acts of Parliament, 7 and 8 Vic., c. 110, and 10 and 11 Vic., c. 78.)
Intended capital £150,000 (with power to increase or diminish the same), in 15,000 shares, of £10 each.—Deposit 1s. per share.
No call will exceed 10s. per share, of which one month's notice will be given.
OFFICES—No. 3, LOTHBURY.

PROVISIONAL COMMITTEE.

Mr. SAMUEL WOOLSEY, merchant, Norwich.
Mr. JOHN KEABLE, jun., Great Yarmouth.
WILLIAM HENRY CALEY, Esq., Cambridge-terrace, Regent's-park.
Mr. ADAM CLARK, salesman, Dumfries and Norwich.
Mr. MARK REDGRAVE, 20, Moorgate-street.
Mr. EMANUEL H. VAN STRAATER, Rotterdam.
Mr. JOHN PITTARD, provision merchant, Cotton's Wharf, Tooley-street.
Captain JAMES TOMLIN, 72, Cornhill.
Captain J. P. CHATTEN, 264, High-street, Wapping.
Mr. STEPHEN FROMOW, salesman, Norwich.
Mr. DAVID GORDON M'QUHAE, salesman, Norwich. 61
Mr. B. J. CHAPMAN, 4, St. James'-road, Old Kent-road.
Mr. SAMUEL THURNELL, Ada-street, Cambridge-heath.
Mr. WILLIAM TREMAINE, 33, Prescott-street, Goodman's-fields.
Mr. AUGUSTUS CROOK, Bungay, Suffolk.
Mr. JOHN LEWIS, 41, Beech-street, Barbican.
Mr. J. VAN RAALTE, Great Yarmouth.
Mr. G. E. PARISH, 15, Cranmer-place, Waterloo-bridge.
Mr. J. E. LAWS, Great Yarmouth.
(With power to add to their number.)

SOLICITORS.

T. D. Keighley, Esq., 73, Basinghall-street; Messrs. Reynolds & Palmer, Gt. Yarmouth.

BANKERS.

Messrs. Barclay, Bevan, Tritton, & Co., Lombard-street; Messrs. Gurneys and Birkbeck, Norwich; Messrs. Gurneys, Turner, and Brightwen, Great Yarmouth; Messrs. Moses, Ezekiel, and Co., Rotterdam.

LONDON AND FOREIGN AGENTS.

London—A. Spielmann, Esq., Lombard-st.
Rotterdam & Dordrecth—J. H. Van Straater.
Amsterdam—E. S. Van Beusekom.
Hanover—Jacob Thorner.
Havre-de-Grace—Henry Mansina
Honfleur—Mons. Magliore Aubert.
Rouen—Alexander Ault, Brothers.
Corunna and Vigo—Messrs. Ortega and Co.
Bilboa—Mr. Joseph Taylor.
Etsinore—Messrs. Severin, Hiesen, and Co.

SECRETARY—James Dove, Esq.

This company is projected for the purpose of organising a system, upon which the importation of cattle and provisions from the continent of Europe, or elsewhere, may be carried on more extensively and economically than it can be by individual speculation. The business of the company will be primarily that of importing cattle, sheep, and provisions from Holland, Denmark, Germany, Spain, Portugal, Scotland, and any other country which presents a favourable market; and attention will also be directed to the purchase of cured and prepared provisions, and dairy, farm-yard, and orchard produce, when it can be imported with advantage.

The importation of foreign cattle for consumption into this country is still in its infancy; but the rapid progress which it has already made, gives ample assurance, not only of the great profit attending it, but of the existence at once of a demand and supply sufficient to afford active and lucrative employment for the resources of a public company.

The following returns are extracted from the official reports of the Board of Trade made up to the 5th of January, 1848:—

A Return of Live Animals Imported in the years 1845, 1846, *and* 1847.

	1845.	1846.	1847.
Oxen and bulls ..... *Nos.*	9,743	17,191	27,811
Cows	6,503	25,349	35,138
Calves	587	2,503	12,389
Sheep	15,845	91,732	136,527
Lambs	112	2,892	3,349
Swine and hogs	1,590	3,856	1,242
Total of all kinds	34,380	143,523	216,456

Showing an increase of more than 400 per cent. in 1846 over 1845, and of more than 600 per cent. in 1847.

A Return of Provisions Imported in the years 1845, 1846, *and* 1847.

	1845.	1846.	1847.
Bacon ..... *Cwts.*	53	2,060	87,057
Beef, salted	84,542	175,051	112,490
Beef, fresh	3,272	2,121	5,011
Hams	5,426	11,242	18,264
Meat, not otherwise described	435	1,118	3,114
Pork, salted	39,540	72,656	235,313
Pork, fresh	133	133	101
Total of all sorts	133,401	265,281	461,460

Showing an increase of about 100 per cent. in 1846 over 1845, and of near 400 per cent. in 1847.

The above returns exhibit a trade in which the transactions appear (from a moderate calculation), to have amounted during the last year to more than *a million and a half* sterling, and to have increased in value fivefold in the short space of *two years*. These results too have obtained by the feeble agency and operations of individual enterprise alone; and if these have been profitable, how much more so would be the organised operations of a public company in the same field?

The advantage which this company possesses will not consist solely in the greater extent of their resources, and the more perfect agency under their direction, but also in the economy with which their capital will be employed. By proper arrangements with respectable houses abroad, they will be able, with a comparatively limited capital, to carry on a very extensive scale of importations from all the productive sources of supply.

The committee have the gratification of announcing that they have secured most eligible water-side premises; and that parties of high character and long standing abroad are prepared to enter into the necessary arrangements with the company, and to co-operate with it in realising its anticipations of success, in which they warmly concur.

In addition, the committee would advert to the great facilities which the progress of steam navigation and railway traffic has at length afforded for the vigorous and successful conduct of that branch of international trade which this company will carry on. A constant and expeditious intercourse is now kept up by steam navigation, between the ports of London, Yarmouth, Harwich, Lowestoft, Great Grimsby, and Hull, on this side, and the principal ports of the continent on the other; and from the latter, railways are diverging in every direction into the interior of the continent, through the rich grazing districts of Holland, Hanover, Prussia, Holstein, and other States of Germany, from which large supplies of cattle and provisions can thus, at all times, be procured.

As an Act of Parliament will not be required for the incorporation of the company, the expenses incurred in its formation will not be considerable; and the interests of the shareholders will be secured by a Deed of Settlement, prepared by counsel, until which time all contracts as to shares will be entered into by and with the secretary only, as a trustee for the company.

The company will commence operations as soon as a competent number of shares are taken, and a sufficient amount paid up to render it expedient. The committee have power to increase or diminish the capital, and to reserve a portion of shares for allotment at a future period, if deemed advisable.

Applications for shares in the annexed form to be sent to the secretary, at the offices of the company, No. 3, Lothbury, where prospectuses may be obtained. Also, at the offices of the solicitors to the company; Adam Spielmann, Esq., Lombard-street; the Bull Inn, Market-place, the Bell Inn, and the Cattle-market Inn, Norwich; Mr. Laws, the Quay, Mr. Costerton, Regent-street, and at the Bear and Angel Inns, Great Yarmouth; Mr. Cavell, Deal; Mr. Burrell, Hastings; Mr. Freeman, Market-place, Northampton; Messrs. R. Cruso and Son, Lynn; Thomas Tootal, Esq., Manchester; Messrs. Redsdale, Myers, and Bailey, Leeds; and at Messrs. John Wills and Co., Liverpool.

FORM OF APPLICATION FOR SHARES.

FOREIGN CATTLE AND PROVISION COMPANY.—(PROVISIONALLY REGISTERED.)
Intended capital, £150,000 (with power to increase or diminish the same), in 15,000 shares of £10 each.—Deposit, One Shilling per share.

To JAMES DOVE, Esq., *Secretary of the Foreign Cattle and Provision Company.*

I request you will allot me shares in the above company; which I agree to accept, or any less number you may allot to me; and to pay, when required, the deposit of 1s. per share to the company's bankers, and to execute the Deed of Settlement, upon receipt of notice from you that the same is ready for execution.

Dated this day of , 1848.

Name in full .....
Profession or business .....
Residence in full .....
Name of referee .....
His residence and occupation .....

NATIONAL LOAN FUND LIFE ASSURANCE SOCIETY,
26, *CORNHILL, LONDON.*
Capital £500,000.—Empowered by Act of Parliament.

This institution embraces important and substantial advantages with respect to Life Assurances and Deferred Annuities. The assured has, on all occasions, the power to borrow, without expense or forfeiture of the policy, two-thirds of the premiums paid (see table); also the option of selecting benefits, and the conversion of his interests to meet other conveniences or necessity.

Assurances for terms of years are granted on the lowest possible rates. 62

DIVISION OF PROFITS.

The remarkable success and increasing prosperity of the society has enabled the directors, at the last annual investigation, to declare a fourth bonus, varying from 35 to 85 per cent. on the premiums paid on each policy effected on the profit scale.

EXAMPLES.

Age.	Sum.	Prem.	Year.	Bonus added.	Bonus in Cash.	Permanent reduction of Premium.	Assured may Borrow.
60	£1000	£0 3 4	1837	£217 15 1	£109 0 11	£16 0 4	£445 0 0
			1838	192 3 0	87 1 4	13 10 2	305 11 1
			1839	165 11 10	74 1 9	11 3 1	346 [illegible]
			1840	116 7 6	54 0 10	7 18 10	226 13
			1841	111 6 8	49 10 0	7 10 4	247 4

The division of profits is annual, and the next will be made in December of the present year. F. FERGUSON CAMROUX, Secretary.

London:—Printed and Published, weekly, by HENRY ENGLISH, at the Office, No. 26, FLEET-STREET, in the city of London, where all Communications and Advertisements are requested to be forwarded—addressed to "the Editor"—post-paid. *May* 6, 1848.

*** It will at all times save much delay and inconvenience, if communications are directed simply To THE EDITOR, *Mining Journal Office*, 26, FLEET-STREET, LONDON.

And POST-OFFICE ORDERS, &c., must be made payable to WILLIAM SALMON MANSELL, as acting for the proprietors.